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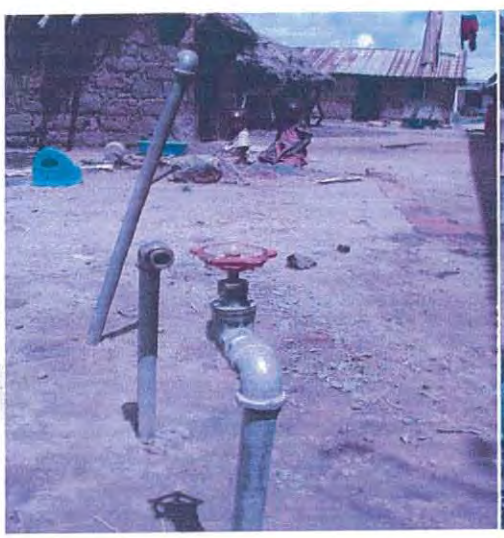
ASSESSING PIPED WATER PROJECT AND ITS IMPACT ON SOCIO-ECONOMIC CONDITIONS OF THE URBAN COMMUNITY IN AMURIA DISTRICT, UGANDA: CASE OF AMURIA TOWN COUNCIL (ATC)



By

ECHIRU KIZITO

A Thesis Submitted to the School of Graduate Studies in Addis Ababa University in Partial Fulfilment of the Requirement for the Award of the Master's of Arts Degree in Urban Development and Challenges in East Africa at the Centre of Regional and Local Development Studies.

June 2012

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Echiru Kizito

Approved by the Board of Examiners — Signature

Chairperson, Centre for Regional and Local Development Studies

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Advisor

Dr. Degefa Tolossa .....

Declaration

I, Echiru Kizito truly declare that this work hereby presented was produced by me and that it has never been presented to any institution for an academic award. Due acknowledgement has been extended to other people's work cited in my work. I take the responsibility for any errors in this work.

Abstract

This study was focused to assess the piped water supply project and its' socio-economic impacts to the urban community of Amuria town council, Amuria district. The key objectives include; assessing roles of actors in the water sector, Identifying factors that influence access to piped water and thereafter assessing impacts of piped water access on socio-economic conditions of the community, and to assess challenges encountered by the actors. The field work was conducted for a period of two months (August-September 2011). This study was based on qualitative approach for data collection and analysis. However, some quantitative data has also been presented in the literatures and analysis part. The findings of this study was based on the three key objectives include the following; the major actors in the piped water supply were the government institutions at national and local levels (MWE, NWSC, DWO and DLB), the NGOs particularly WaterAid Uganda, private company here referred to Ambitious Construction Company Limited (ACCL) and the community. The informal sector like the water vendors were also found to be one of the actors involved in water services provision to the community, though they do not directly interact by other institutions dealing with piped water. The major determinants for piped water access were found to be access to land, NWCS Charter, Government policies in addressing poverty, unemployment, infrastructural development and general economic conditions like inflation. Socio-economic impacts have been registered by those connected to piped water in the areas including not limited to; time saving, increased productivity in water related businesses, health and hygiene improvement and improved school attendance for school going children. It has also created employment opportunity to some households who are able to sell piped water to community members to earn income. However, the main challenges facing the water supply include governance ineffectiveness in service delivery (low service provision, poor accountability, bureaucracy, no public participation), limited man power and equipments at Amuria NWSC sub-office, political issues, high costs of water production and supply, inefficient power supply at the water pumping site (Aoja swamp), and limited quality assurance of the services provided among others. Therefore, the recommendations for water supply include the need to; stakeholders' participation should be embraced by government, addressing staffing and equipment problem, alternative sources of power like stand by generators, poverty reduction strategies and plans should be effectively implemented at all levels in the community by both government and development partners.

Dedication

I dedicate this piece of work to my beloved Dad Mr. Otim Vincent and my late Mother Amwonyo Madesta who has not lived to see my personal achievements. I also dedicate it to my caring wife Ilemu Caroline, thank you hooray!

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My sincere appreciation goes to the Norwegian government for NOMA (NORAD's scheme for Master Studies) programme management. With special thanks to Rita Kumar NOMA Consultant Division of Student and Academic Affairs office of International Relations NTNU, Thomas Jakobsen and Gro Synnøve Johnsen Social Counsellors Office of International Relations, Norwegian University of Science and Technology (NTNU) for their tireless contribution to the success of the programme when I was in Norway for the first semester Autumn 2010 and also NORAD's continuous facilitation of the programme in Addis Ababa University (AAU), Ethiopia.

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All those who provided data and information during my field Work, I really salute you all, especially Menya John, Etwalu Sam, Ayerango Mildred and Shonot Moses NWSC staff Amuria sub-office including the NWSC area manager who preferred anonymity and all respondents, thanks for your generosity and kindness in providing me with relevant information.

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List of abbreviations

ACCL	Ambitious Construction Company Limited
ACOD E	Advocates Coalition for Development and Environment
ADDA	Amuria District Development Agency
ADDP	Amuria District Development Plan
ATC	Amuria Town Council
CCA	Community Country Assessment
CSC	Customer Service Charter
DEA	Directorate of Environmental Affairs
DWD	Directorate of Water Development
DWO	District Water Office
DWRM	Directorate of Water Resources Management
FDGs	Focus Group Discussions
HPI	Human Poverty Index
LC	Local Council
LLGs	Lowcr Local Governments
LRA	Lord's Resistance Army
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDGs	Millennium Development Goals
MFPED	Ministry of Finance, Planning and Economic Development
MGLSD	Ministry of Gender, Labour and Social Development
MWE	Ministry of Water and Environment
NAADS	National Agriculture Advisory Services
NDP	National Development Plan
NEMA	National Environment Management Authority
NGOs	Non Governmental Organisations
NWSC	National Water and Sewerage Corporation
PEAP	Poverty Eradication Action Plan
PLE	Primary Leaving Examination

PMA	Plan for the Modernisation of Agriculture
PPA	Participatory Poverty Assessment
UBOS	Uganda Bureau of Statistics
UGX	Uganda Currency (Shillings)
UNDP	United Nations Development Programme
UNICEF	United Nations Children Fund
UNWDR	Uganda National Water Development Report
UWASNET	Uganda Water and Sanitation NGO Network
WAU	WaterAid Uganda
WHO	World Health Organisation
WPC	Water Policy Committee
WSC	Water and Sanitation Committee
WSDF-E	Water and Sanitation Development Facility-East
WUC	Water User Committee
1 US$	2,500UGX at the time of the study

CHAPTER ONE: INTRODUCTION

1.1 Global urban water crisis

Urban populations have exploded worldwide in the last fifty years creating unprecedented challenges, among which provision for water and sanitation have been the most pressing and painfully felt when lacking. Those who suffer the most are the poor, often living in slum areas that are left out of water development schemes, due often to failures in governance at many levels. Yet new partnerships emerge, where local communities are empowered to build innovative and efficient models that integrate socio-economic realities and improve water and sanitation provision (UN-HABITA: 2005).

Globally, the diseases associated with poor water and sanitation have considerable public health significance. In 2003, it was estimated that 54 million Disability-adjusted life-years (DALYs) or 4 per cent of the global DALYs and 1.73 million deaths per year were attributed to unsafe water supply and sanitation, including lack of hygiene (WHO: 2007). During the 1980s and 1990s there was considerable investment in the provision of water supply and sanitation in developing countries. In 2004, however, still a significant proportion of the world's population remained without access to safe drinking water and improved sanitation (WHO: 2006).

It is worth noting the examples from world cities and small urban centres such as; Bangalore in India, more than half of the 6 million inhabitants depend for water on public fountains, often with broken taps or pipes and damaged platforms (TARU Leading: 1998). Almost a third have little or no access to piped water, 113,000 have no access to a latrine, and defecation in the open is common (Benjamine *et al*: 2000). Faisalabad in Pakistan, two thirds of the 2 million inhabitants live in areas with little or no official provision for services; and most new housing and land development occurs without official approval. Less than half the population has piped water and less than a third is connected to sewer system (Alimuddin *et al*: 2000). Luanda in Angola, city of some 4 million inhabitants, 75% live in informal settlements with little or no infrastructure and services (Development workshop: 1999). Ibanda in Nigeria, only 22% of the population are served by the municipal water supply system, and the city has no sewer system, inhabitants rely on pit latrines and latrines connected to septic tanks (UNICEF:1997). Nairobi in Kenya, more than half the population live in informal settlements squeezed onto less than 6% of the city's land. Most plots in these settlements have no toilet or water connection (Alder: 1995). Mbandjock in Cameroon, only

about 20% of the population (estimated at 20,000 in 1996) have access to piped water; the rest rely on wells and springs which test positive for faecal contamination. The city has no sewer system (Tchounwou *et al*: 1997).

The global estimates indicate that an additional annual investment of USD 11.3 billion is required to meet the Millennium Development Goal (MDG) on water supply and sanitation. The annual per capita cost to meet the MDG on water supply and sanitation in Bangladesh, Cambodia, Ghana, Tanzania and Uganda ranges from USD 4 to USD 7 per capita annually (Stockholm International Water Institute /SIWI: 2004)

1.2 Urban Water Supply Issues in Uganda

Development of conventional piped water supply systems in Uganda started during the colonial period in 1940s. The majority of the older systems were constructed from 1950 to 1965, mainly in regional and district headquarters to serve the workers and the small commercial communities, (UNWDR: 2005). Furthermore, this report states that, by 1990 virtually the whole urban water supply infrastructure was run down and serving less than 10 per cent of the population in the larger towns and only 36 urban water systems were available.

According to the water sector, urban areas are defined as human settings with population exceeding 5,000 persons or that are gazetted as District headquarters. Small towns have populations from 5,000 to 15,000 persons, and large ones above 15,000 persons (UNWDR: 2005).

While Uganda is striving to achieve a target of 77% safe water coverage for rural water and 100% for urban by 2015 and significant progress has been made since 1990, outbreaks of waterborne diseases such as cholera however, continue to occur. Between April and August 2006 alone, there were 989 cholera cases and 13 deaths in Kitgum district (MWE: 2006 cited in MWE: 2007b).

The Government of Uganda signed up to the Millennium Development Goals (MDGs) and is committed to the implementation of the recently launched National Development Plan (NDP)

2010/11-2014/15, among others. Pillar 7 of the MDGs; aims at reducing by half the percentage of the population without access to clean water by 2015. This implies raising access to 75 % by 2015, (DWD, MWE: 2010). Over the past years, progress has been made in the provision of basic water supply, which now stands at 65% in rural areas and 66% in urban areas. It is estimated that 68% of rural Ugandan's have latrines. In urban areas, 73% of the population has access to sanitary toilets. Average access to safe water in small towns is 51% (DWD, MWE: 2009). But 40-60 percent of Ugandans still lack access to safe drinking water and often rely on open source water sources like unprotected springs/wells, rain water, gravity flows and dam water (DWD, MWE: 2009).

1.3 Urban Water Supply Project in Amuria district, Uganda

Providing access to safe drinking water and basic sanitation is a proven engine driving development and promoting health (WHO: 2009). Water is a vital requirement for human survival and maintenance of health. It is a prerequisite for many life-supporting activities including food production, cooking, personal hygiene, sanitation, economic development as well as social development of a community and plays an important role in improving the quality of life (Jogdish: 2007).

Amuria District has 687 domestic water points (BH, SW, PS, RWHT, PSP) of which 6 have been non-functional for over 5 years and are considered abandoned. The main water supply technology is the deep borehole (DWD, MWE: 2010). In 2009, Amuria town council had access to safe water at 20% (MWE: 2009). Therefore, it is possible to note from Schouten and Moriarty experience:

> *"Before the construction of the water project, the women hauled water to the houses from waterfalls or from small springs. It was used for food preparation, drinking and bathing the young children, as well as for the family gardens close to the house and for the domestic animals: horses, cows, chickens and pigs. To wash the clothes, the women had to go to the river. The older children, adolescents and adults would go to the river to bathe, or else use the waterfalls. After the construction of the system, the water from the system was used for drinking but also for washing and bathing, for the family gardens, domestic animals and sometimes for coffee processing."* (Schouten and Moriarty: 2003).

1.4 Statement of the problem:

Since Amuria district came into existence in July 2005 through the Act of parliament, Town Council communities in the urban area fetched water from different sources ranging from those which are unsafe to relatively safer sources for example, open wells, small scale rain water harvesting and boreholes respectively. *In 2009, Amuria town council had access to safe water at 20%* (MWE: 2009). This coupled with the increasing urban population; piped water supply was opted to address the shortage of safe water and increase access and quantity of water for the urban dwellers. At the initial stage of this water extension project in early 2009, most of the households who owned land (plot) in the urban area were required to pay connection fee of 50,000 UGX (Uganda shillings). This amount of money favoured only those who could afford to pay and got connected, while the low-income poor members of the community were not connected to piped water. Other factors that contributed to one's access to piped water include; ownership of land with all documents of ownership proof, being near to the main water distribution line and population size in a given cell/ward.

Amuria district in Uganda is one of the districts with high figures of human poverty index (HPI); which stands at 33.2 above the national level of 25.21 according to Uganda Human Development Report (UNDP: 2007a). This high HPI for Amuria district can be attributed to some of the major disasters like the Lord's Resistance Army (LRA) rebel attack in 2003 and floods event in 2007 which devastated the livelihood assets of the community in Amuria District. People lost lives, properties were destroyed, infrastructure like roads were broken down and poor service delivery including health, water and education services. Amuria Town Council received a large number of people fleeing from such disasters and some people ended up buying land/plot within the urban area to establish permanent settlement. The district population is 344,200 people, of which 58% has access to safe water (DWD, MWE: 2010).

Table 1.1: Water access by both Urban and Rural communities in Amuria district.

Year 2010	**Total**	**Urban**	**Rural**
Population	**344,200**	5,136	339,064
Population served	**197,959**	3,121	194,838
Access	**58%**	61%	57%

Functionality		82%	86%
Equity		-	79%
Management (functionality of WSC)		-	60%
Gender (WSC with women in key positions)		-	84%

Source: (DWD, MWE: 2010).

The available literature for Amuria district water supply focuses on the water access level (DWD, MWE: 2010, MWE: 2009; UNWDR: 2005). Other literatures are concerned with access and health conditions (WHO: 2009; WHO: 2007; WHO: 2006). Little is known about the performance of the urban piped water project and its socio-economic impacts particularly for the case of Amuria Town Council Community. This study is meant to contribute to the available knowledge in the level of water access, effectiveness of urban water system, and impacts on the socio-economic conditions and suggest remedies to the negative impacts while identifying areas for future research.

1.5 Justification of the study

The focus of the study is to assess the performance of the urban piped water system and its impacts on the socio-economic conditions and thereafter make recommendations for further research. *"...it is rare for the data collected on water and sanitation provision to be made available to urban governments and water and sanitation agencies that can help improve and extend provision,"* (UN-HABITA: 2005). It is of significance to Government, Non-Government Organisations and private investors in the field of urban water supply and management to plan for sustainable development. It is also important for academic purpose since this piece of work will be available in the library for public use, thus helpful for future researchers.

1.6 General objective

To assess piped water project, how and why it has impacted on the socio-economic conditions of the urban dwellers in Amuria Town Council.

1.6.1 Specific objectives to the study

(a) To assess the role played by different actors and their contribution to the performance or effectiveness of the urban water project.

(b) To examine factors influencing access to piped water and socio-economic impacts to the urban community.

(c) To identify challenges faced by the actors and recommended strategies for water supply improvement.

1.6.2 Research Questions

- Who are the actors involved in this urban water supply project? And what role do they play? How effective is the urban governance in the field of water provision?
- Why are some households not accessing piped water and how has the project impacted on the socio-economic conditions of the community?
- What challenges are being encountered by the actors? How do they cope with the challenges?

1.7 Limitations to the study and remedies used.

This study is limited to the three objectives of assessing the roles of actors and piped water, factors influencing access and socio-economic impacts and identification of challenges faced by actors focusing on NWSC and the Customers in Amuria Town Council. The study does not cover the water situation in the whole district and does not have a general conclusion for this matter. However, some field Challenges faced were Travelling long distance (12km) from my residence to the study area was quite a challenge; however, I borrowed a motorcycle from my brother to address such challenge on transport though fuelling and maintenance was part of my expenditure throughout the data collection period. There was a problem of bad weather conditions especially too much rains that could interfere with data collection, meeting the time of appointments with key informants was sometimes forwarded to another date due to such conditions. Political conditions like "walk to work" demonstrations by political activists and "sit down strikes" by teachers in government national institutions was another factor causing minor hindrances in data collection. To encounter political interferences, I used one of the LC 1 chairpersons as my research assistant so that whenever I was in the field, he could introduce me to the participants as a process of building rapport and avoiding any political suspicion from the respondents. I also encountered health challenge, whereby I took a period of one week treating malaria and all the appointments that I had made earlier with some respondents were cancelled, but later rescheduled for another date. However, in spite of the above challenges, I was able to collect data that answered my objectives of the study.

1.8 Structure of the thesis

I have structured my work into eight chapters. In Chapter One, I briefly discussed in the introduction; global water crisis, water issues in Uganda. This chapter also contains the statement of the problem, justification, objectives, research questions, and limitations of the study. Chapter Two, I have discussed about theoretical framework and presented related literature. I further developed my own analytical framework for this study which is focussed on understanding actors' interactions and their outcomes in service provision and access. I have given a brief explanation on how the framework works. Governance and water supply issues like effectiveness, decentralisation and equity in service delivery are explained in this chapter. In Chapter three I explained the methodology used which covers the tools used for collecting and analysing data and ethical issues. Chapter four presents the background to the study area; locational aspect, physical environmental issues and socio-economic conditions have been briefly presented. Chapter five discusses the roles of different actors in the provision of water services in ATC and water supply performance indicators (effectiveness, operational efficiency and cost effectiveness) are discussed. This chapter answers objective one of the study. Chapter six mainly deals with factors influencing access to piped water and socio-economic impact of accessing and using piped water. I have explained the positive impacts on poverty reduction, education, health and productivity in water related economic sectors among others. However, some negative impacts have also been considered. Chapter seven deals with the challenges faced by actors, here I identified some recommended solutions for water supply improvement. This chapter answers part of objective two and three respectively. Finally in Chapter eight, I have provided a summary of the findings, conclusion and recommendations.

CHAPTER TWO: THEORETICAL FRAMEWORK AND RELATED LITERATURE

2.1 Introduction

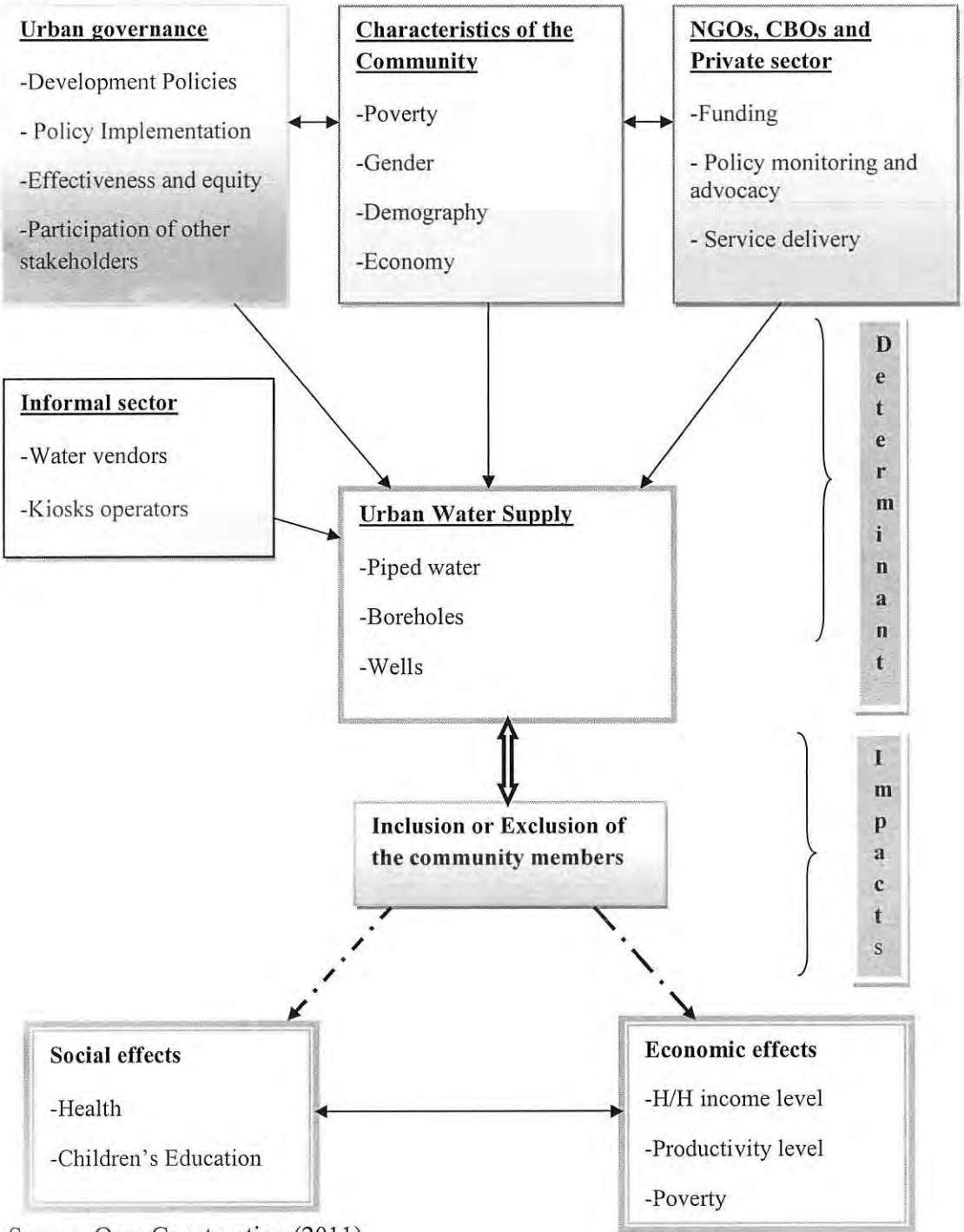
This study is based on structuralist and structurational perspectives. The structuralist framework derive most arguments from Marxist theories that seek to understand or examine economic and political perspective that the processes of change and dynamics within society, and exposing hidden levels of structures which regulate the uneven nature of society (Kitchin and Tate: 2000). In understanding the explanations in the theory, actor-oriented analysis has been adopted in this approach. Actor-oriented analysis explains how the meanings, purposes and powers associated with different modes of human agency intersect to shape the outcomes of emergent social forms. It also explains the importance of understanding the past experience, knowledge and power relations within a particular structure.

Within a structuralist framework there are three levels of analysis: '(1) the level of appearance, or the *superstructure*; (2) the level of processes, or the *infrastructure*; and (3) the level of imperatives, or the *deep structure*' (Johnston: 1985; Kitchin and Tate: 2000).

A Marxist geography seeks to identify how social relations vary over time in order to reproduce and sustain the modes of production and consumption, to suggest alternative futures, and to offer political resistance (Peet and Lyons: 1981). Unwin (1992) contends that structuralist approaches have most commonly been applied to four main areas of geographical study: an historical geography of transition from feudalism to capitalism; urban geography; regional inequalities and industrial restructuring; and the Third World.

Basing on a brief background and explanation on this framework, urban water supply calls on the understanding of the interaction between many actors like; the Government at national and local levels, private sector, NGOs, Community Based Organisations and the local community. I have developed my analytical framework that looks at the governance roles in urban water supply, NGOs, CBOs, private sector and the public in this case consumers including the informal sector targeting water vendors. I discussed how these actors interact in water provision and access as well as the resulting effects to the socio-economic conditions of the community in Amuria Town Council.

Figure 2.1: Actors Analytical Framework for Water Provision, Access and Impacts



Source: Own Construction (2011)

⟺ Water access from different sources ⟷ Interactive Influence

- · - · ▸ The impacts resulting from inclusion and or exclusion

——▸ Conditions determining water provision and access

This analytical framework was developed based on the field data which clearly showed how different actors are directly or indirectly involved in the provision of water to the urban community. Urban governance plays a key role in policy, planning and implementation issues which influence the type of water resources allocated to the community. Also government policies affect the characteristics of the community in terms of poverty level, economic development, equity in the access to certain services to mention but a few. However, community characteristics like population size, economic activities and gender issues influences to some extent government policies in designing programmes that are targeted to address certain needs of the community like water. On the other hand; NGOs, CBOs and private sector affects both the community and water provision through their involvement in different activities like funding to water projects, service delivery such as construction of water facilities and their level of policy monitoring and advocacy determines how the community benefits from the water supply. The water vendors and kiosk operators act as intermediaries of water supply deficiencies; they do not contribute to establishment of the water facility but only engaged in profit making activities. They interact with the available water supply system to provide water to the community through accessible means like door to door water sale service and also at permanent locations for the case of kiosk.

It is worth noting that, within the community there are different socio-economic groups of people of which here I have tried to categorize as; low-income group, middle income group and high income group. All these groups have specific characteristics that influence their access to or exclusion from piped water supply. Details on characteristics and factors influencing piped water access in ATC are covered in Chapter Six.

The outcomes of actors' interaction in water supply results to either positive or negative impacts on socio-economic conditions of the community; The impacts can be observed in household income, education for school going children who are involved in water collection, personal hygiene and health, and productivity in water related sectors. These impacts are discussed in Chapter Six.

Key concepts: actors, urban water supply and coverage, urban governance and effectiveness, access and equity.

2.2.0 Governance and water supply

2.2.1 Definition of key words

Actors here I refer to institutions of the government, NGOs, Private sector and the community who have a stake in water supply system.

Governance according to (UNDP: 2007b) is defined as 'the system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions within and among the state, civil society and private sector. It is the way a society organises itself to make and implement decisions-achieving mutual understanding, agreement and action.'

Government effectiveness refers to the measure of the ability of the government to formulate and implement sound policies, 'this includes indicators of quality of public services, the quality of bureaucracies and competences of civil services. Focus is on governments' ability to 'produce and implement good policies and deliver public goods.' (Kaufmann *et al*: 2007).

Urban water supply includes a water source (spring, surface or borehole), storage tank and pipe distribution network (MWE: 2007). WHO (2005), categorises water supply systems as a number of steps aimed at assuring the safety of drinking water, including: preventing pollution of source waters, selective water harvesting, controlled storage, treatment prior to distribution, protection during distribution, and safe storage within the home and in some cases, treatment at the point of use.

Water coverage, according to UNWDR (2005) coverage relates to percentage of the population with access to an improved water source within a walking distance of 1.5 Km in a rural area and 0.2 Km in the urban area.

Water Access, Jagdish (2007) defined water access as the number of people who are guaranteed safe drinking water in sufficient quantities. He argues that, 'water intended for human consumption should not only be safe but also wholesome.'

2.2.2 All necessary legal framework at all levels in Uganda

2.2.3.1 Constitution

The Constitution of the Republic of Uganda (1995) sets down the state objectives, provides the framework for decentralisation, and overall principles of state policy. The constitution states that the state shall promote sustainable development and public awareness of the need to manage land, air and water in a balanced and sustainable matter for the present and future generations. It also states that every Ugandan has the right to a clean and healthy environment, while expecting citizens to play their part in creating this (MWE: 2007a).

2.2.3.2 Water Statute

The Water Statute (1995) provides the framework *"...for the use, protection and management of water resources and supply; to provide for the constitution of water and sewerage authorities and to facilitate the devolution of water supply and sewerage undertakings".*

The main objectives set out in the statute are to:

(a) promote the rational management and use of the waters of Uganda by:

- progressive introduction and application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources;
- co-ordination of all public and private activities which may influence the quality, quantity, distribution, use or management of water resources;
- co-ordination, allocation and delegation of responsibilities among Ministers and public authorities for the investigation, use, control, protection, management or administration of water resources;

(b) Promote the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons;

(c) Allow for the orderly development and use of water resources for purposes other than domestic use, such as the watering of stock, irrigation and agriculture, industrial, commercial and mining uses, energy, navigation, fishing, preservation of flora and fauna and recreation in ways which minimizes harmful effects to the environment;

(d) Control pollution and to promote the safe storage, treatment, discharge and disposal of waste which may pollute water or otherwise harm the environment and human health (MWE: 2007a).

2.2.3.3 National Water Policy

The National Water Policy (NWP), adopted in 1999, provides the overall policy framework for the water sector. The National Water Policy promotes the principles of integrated water resources management as a means to ensuring sustainable management and utilization of Uganda's water resources. The policy also emphasizes the recognition of water as being both a social and economic good, whose allocation should give first priority to domestic use. The Policy is based on the principle of **"some for all, rather than all for some"** adopted from the 1990 "New Delhi Statement". It anchors operation and maintenance as an important and integral part of all water and sanitation programs to ensure their sustainability. The policy also highlights the key role played by women in all water management and development activities (UNWDR: 2005).

2.2.3.4 Land Act

The Constitution of the Republic of Uganda (1995) and Land Act (1998) set out the various land tenure systems in Uganda. All land is vested in the citizens of Uganda to be owned in accordance with customary, freehold, mailo and leasehold tenure systems. This means that both Government and private owners of land can set up facilities on land they occupy and own. Land tenure issues are critical to the development of water infrastructure. Any location of a water supply project must respect the proprietary rights of the landowner or occupier as protected by the Constitution (1995) and the Land Act (1998) (MWE: 2007a).

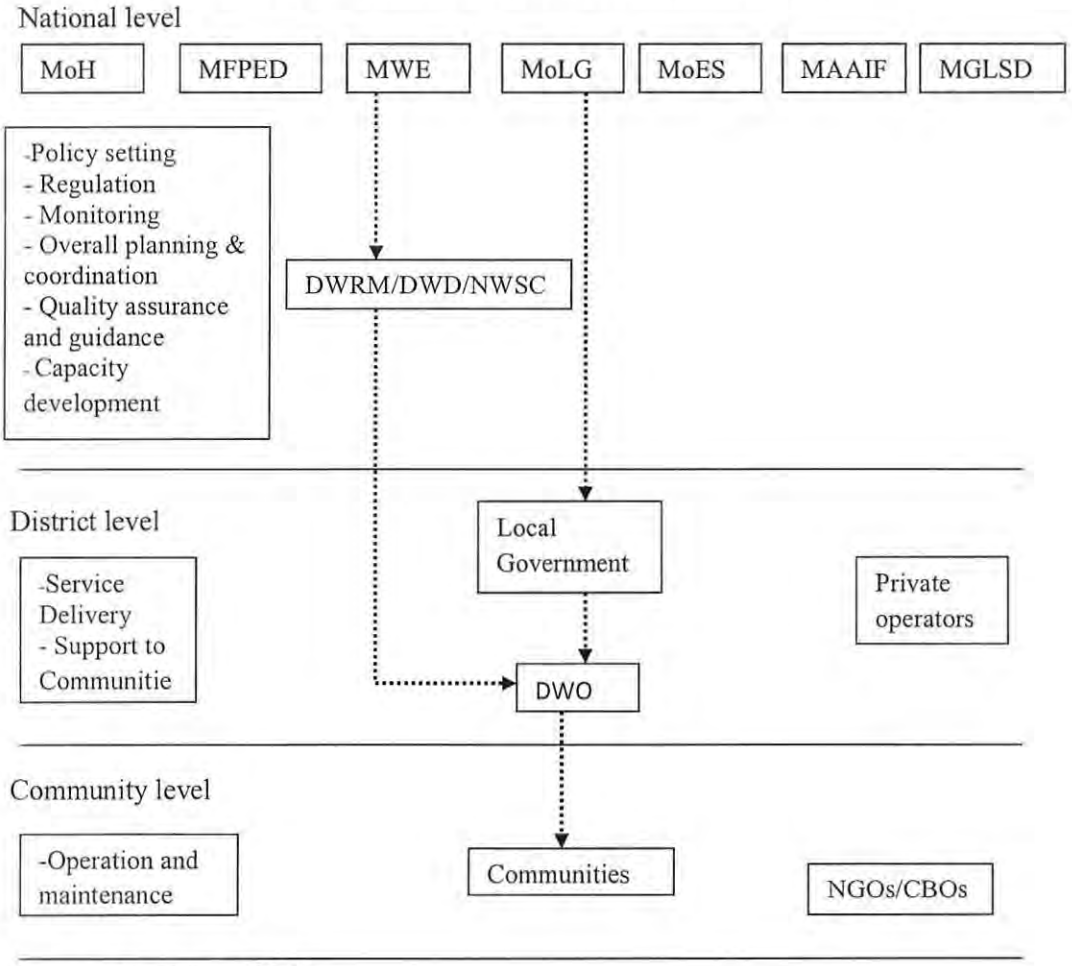
2.2.3.5 The Local Governments Act

The Local Governments Act (1997) specifies functions and services for central government, district councils, urban councils and those to be devolved by the district council to lower government councils. This is in conformity with the constitution of the Republic of Uganda. It builds on the Decentralisation Act (1995) (MWE: 2007a).

2.3.1 Water Institutional Structural Arrangement in Uganda

The institutional framework for the water sector comprises a number of institutions that participate directly in the provision of water and sanitation services at the national, district and community levels as indicated by Figure 2.2.

Figure 2.2: Water and Sanitation Sector Institutional Framework



Source: (MWE: 2008).

2.3.1.0 Roles and responsibilities of different actors in the water sector

a) National Level

The Water Policy Committee (WPC) is a cross-sectoral institutional framework for water resources management and plays an essential high-level role in directing the development and management of Uganda's water resources across sectors and development interests. The WPC as provided for in the Water Act Cap 152, article 9 is composed of heads of key sectors related to water resources management and is chaired by the Permanent Secretary (MWE: 2008).

The Ministry of Water and Environment (MWE) has the overall mission:

"*To promote and ensure the rational and sustainable utilisation, development and effective management of water and environment resources for socio-economic development of the country*". The ministry has three directorates: Directorate of Water Resources Management (DWRM), Directorate of Water Development (DWD) and the Directorate of Environmental Affairs (DEA). MWE has the responsibility for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management. It also monitors and evaluates sector development programmes to keep track of their performance, efficiency and effectiveness in service delivery (MWE: 2008).

The newly created Directorate of Water Resources Management (DWRM) is responsible for managing, monitoring and regulation of water resources through issuing water use, abstraction and wastewater discharge permits. The directorate comprises three departments namely Department of Water Resources Monitoring and Assessments, Department of Water Resources Regulation and Department of Water Quality Management. DWRM was established in July 2007 and the process of filling the top positions is almost completed. However performance is not at peak because of the administrative structure not being fully staffed. Effort has been made to fill the vacant positions with contract staff while confirming permanent staff in the senior positions (MWE: 2008).

The Directorate of Water Development (DWD) is responsible for providing overall technical oversight for the planning, implementation and supervision of the delivery of urban and rural water and sanitation services across the country, including water for production. DWD is responsible for regulation of provision of water supply and sanitation and the provision of capacity development and other support services to Local Governments, Private Operators and other service providers. DWD comprises three Departments; Rural Water Supply and Sanitation; Urban Water Supply and Sanitation and Water for Production.

The National Water and Sewerage Corporation (NWSC) is a parastatal that operates and provides water and sewerage services for large urban centres across the country including Kampala. NWSC's activities are aimed at expanding service coverage, improving efficiency in service delivery and increasing labour productivity. Key among its objectives is to plough back generated surpluses for infrastructure improvements and new investments.

A number of other line ministries that have important roles in the sector:
The Ministry of Health (MoH) is responsible for hygiene and sanitation promotion for households through the Environmental Health Division (EHD).

The Ministry of Education and Sports (MoES) is responsible for hygiene education and provision of sanitation facilities in primary schools. It also promotes hand washing after latrine use in the schools.
The Ministry of Gender, Labour and Social Development (MGLSD) is responsible for gender responsiveness and community development/mobilisation. It assists the sector in gender responsive policy development, and supports districts to build staff capacity to implement sector programmes.

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) spearheads agricultural development. This includes the on-farm use and management of water for production (irrigation, animal production and aquaculture).

The Ministry of Finance, Planning and Economic Development (MFPED), mobilises funds, allocates them to sectors and coordinates development partner inputs. MFPED reviews sector plans as a basis for allocation and release of funds, and reports on compliance with sector and national objectives.

The NGOs working in the sector are coordinated at the national level through UWASNET, Uganda Water and Sanitation NGO Network an umbrella organization, which has been largely funded by sector development partners through MWE.

b) District Level

Local Governments (Districts, Town Councils, Sub-Counties) are empowered by the Local Governments Act (2000) to provide water services. They receive funding from the centre in the form of a conditional grant and can also mobilise additional local resources for water and sanitation programmes. Local Governments, in consultation with MWE appoint and manage private operators for urban piped water schemes that are outside the jurisdiction of NWSC (MWE: 2008).

Private Sector firms undertake design and construction in the sector under contract to local and central government. Private hand pump mechanics and scheme attendants provide maintenance services to water users in rural and peri-urban areas. Private operators manage piped water services in small towns and rural growth centres (MWE: 2008).

c) Community Level

Finally, Communities are responsible for demanding, planning, contributing a cash contribution to capital cost, and operating and maintaining rural water supply and sanitation facilities. A water user committee (WUC), which is sometimes referred to as a Water and Sanitation Committee (WSC) should ideally be established at each water point, (MWE: 2008).

2.3.2 Background information about Amuria piped water project1

The project came as a result of the government effort to ensure that small towns benefit from water and sanitation development. It was designed under the Water and Sanitation Development Facility-East (WSDF-E). The establishment of WSDF-E by the Government of Uganda in 2007 was to improve service delivery and funding mechanism to focus on provision of water supply and sanitation to small towns and rural growths centres in the North East and Eastern region (MWE:2010). The project for Amuria district was contracted in 2008 to Ambitious Construction Company Limited (ACCL) and work commenced September 2008 and completed 2010 July.

2.3.2.1 Objectives of the project:

- To improve the socio-economic situation and the opportunities for people living in small Towns/Rural growth centres targeted
- To improve general health conditions through the reduction of water borne diseases in the targeted areas
- To empower communities in the targeted Small Towns/Rural Growths Centres and enable them to participate in national development

[1] http://www.mwe.go.ug/DWD/49/Projects/WSDF-East . available on 20/11/2010 all details of the project were posted on the website and here a few have been stated.

- To contribute to environmental protection through resources protection and the use of appropriate technologies in water and sanitation interventions
- To ensure that the gender issue is addressed in such a way that women are empowered and both sexes are involved as decision makers (MWE: 2010).

2.3.2.2 Expected Outputs

- Improved, rehabilitated and extended physical water supply infrastructure and sanitation facilities in North Eastern Towns including Amuria, Kotido, Kaabong, Abim, Moroto, Namalu, Suan, Kumi and Ngora.
- New water supply schemes and sanitation facilities in 30 small towns and rural growth centres in the North East and Eastern Regions
- Improved and strengthened institutional capacity for management and operation of water supply systems (MWE: 2010).

2.3.2.3 Performance indicators

- Completed and functioning water supply systems in all targeted towns
- Number of completed and functional new water supply schemes and sanitation facilities in small towns and growth centres in the North East and Eastern regions
- Improved household hygiene and sanitation through public education, awareness raising and campaigns
- Number of public toilets and other solid waste and drainage facilities provided per town onsite sanitation
- Institutional support through the provision of urban water office in the small towns
- Trained water authorities for sustainable project management (MWE: 2010).

2.3.2.4 Description of the work contracted to ACCL for Amuria water project

Project No. 59, Contract No. MWE/WRKS/07-08/00260; Construction of 17km of DN 150 line from Dakabela to Amuria and testing existing 12.9km 150 ND existing AC line from Soroti to Dakabela and replacement of defective parts. Construction of 150m3 elevated steel tank at Amuria. Laying 11km of 40-110 OD distribution and intensification pipe

work, making 250 numbers of service connections and provision of 10 public stand pipes including the construction of 1 urban water office[2].

2.3.2.5 Project Financing

The WSDF-E provides a platform to attract funding from various sources to implement the programme. The eight towns in the North East are earmarked to be co-financed by the Government of Uganda (GoU) and Arab Bank for Economic Development in Africa (BADEA). While, WaterAid co-financed completion of construction of Amuria town water supply (MWE: 2010).

Box 2.1: Non Government Organisation Funding for water supply project

WaterAid donates sh400m to Amuria

Wednesday, 2nd July, 2008

WATERAID, an international charity, is to fund extension of clean water to Amuria Town Council with sh400m, writes **Ronald Kalyango.**

Six companies have expressed interest in the project. They include Med Technologies, Sumandura Technologies, Kol Services, Ambitious Construction Company and Spencon Services.

WaterAid is dedicated to helping people escape from poverty and diseases that are caused by living without safe water and sanitation.

WaterAid's work in Uganda includes establishment of sustainable water supplies and latrines.
The eight-month exercise, which will be executed under the North towns and Sanitation Project, is a joint venture with the water and environment ministry.
Work will include construction of 150 cubic metres of elevated steel tanks, laying 11km of distribution and intensification pipe work, making 250 service connections and 10 standpipes as well as constructing a water office.

The Amuria district chairman, Julius Ochen, said the Government's policy of awarding contracts from the centre always leads to poor service delivery.

Source: The New Vision newspaper Kampala- Uganda, 2nd July 2008[3].

[2] http://ambitiousconstruction.com/jc.php?jc=projects.uganda5 available on 20/11/2010

[3] http://newvision.co.ug/D/8/220/636822/Amuria%20town available on 9th/12/2010

2.4.0 Decentralisation and Local Government service delivery

In 1992, Uganda adopted the decentralization policy that sought to establish a system of governance underpinned by strong local governments. Subsequent constitutional and legal reforms established districts and the sub-counties as key pillars of local governments through which effective service delivery and local governance is to be attained. Although decentralization has been pursued over the last two decades, there is widespread consensus that the performance of local governments is less than desirable. The revenue base of local governments has diminished and they are now heavily dependent on central government disbursements mainly through conditional grants. 'The quality of services is less than desirable as key services such as health care, water and sanitation, education and agricultural advisory services remain dismal. Yet, there is no evidence that the citizens who are the intended beneficiaries of the decentralization system are able to demand for accountability and better performance from their elected leaders' (Ssemakula, *et.al*: 2010).

The Local Government system is based on the policy of decentralisation, enshrined in the 1995 Constitution of Uganda and further detailed in the 1997 Local Governments Act. Through the policy, five levels of Local Council are recognised, each level having statutory functions with respect to participatory development. The District and City Council are the highest levels followed by County/Municipal Council; Sub county/Division/Town Councils, Parish/Ward Councils and Village Councils. The District Council; City Council; Municipal Councils; Sub-county Councils; Municipal Division Councils and Town Councils are local governments. The County Councils; Parish Councils and Village Councils are administrative units (WAU: 2008).

Local Government Councils are corporate bodies charged with responsibility for providing Services, which are stipulated in Part II of the Second Schedule of the Local Governments' (Amendment) Act, 1997. They hold the following powers, functions and responsibilities:

- To prepare, approve and implement development plans based on locally determined priorities;
- To prepare, approve and implement their own budgets;
- To raise and utilise their own resources according to their own priorities after making legally mandated transfers;

- To make ordinances and bylaws as long as they do not contradict the Constitution and other national laws;
- To hire, manage and dismiss their own staff;
- To manage their own payrolls and separate personnel system.

Decentralisation promotes bottom-up participatory planning and the involvement of the poor in project management. Through this process, the priority needs of the poor can be identified, incorporated into the lower local council development plans and implemented (WAU: 2008).

However, for NWSC water provision is less participatory and the planning is usually done at the national level by the ministry of water and environment (MWE), this therefore reflects top-down planning as this study confirms in chapter five.

2.5.0 Equity in water supply

The Ugandan government's water policy of 1999 espouses a "***some for all, not all for some***" principle. It seeks to ensure that resource allocation decisions taken at the lowest planning level (parish) are based on whether a particular village is better or worse off than its neighbours in that parish. It is still a challenge in the sector to ensure the government's Pro-Poor Strategy is put into practice, and to ensure equity at all levels. During financial year 2005/06, the urban sub-sector was allocated 72% of total sector funds. Of the total achievements for the small towns during the same financial year, 1% of the urban poor received water (WAU: 2008). Therefore, "*The ability to pay rather than equity is the key factor in determining access to urban water services*" (WAU: 2008).

Table 2.1: National Water Provision Target by 2015.

Urban	Achieve 100% safe water coverage and 100% sanitation coverage in urban areas by 2015, with an 80%-90% effective use and functionality of facilities
Rural	Achieve 77% of safe water coverage and 95% sanitation in rural areas by 2015, with an 80%-90% effective use and functionality of facilities.

Source: UNWDR (2005)

NWSC categorizes the following strata of customers as "urban poor":

- Household incomes of less than Shs.80, 000 (US Dollars 40) per month and in most cases earned on a day-to-day basis i.e. equivalent house hold income of US Dollars 1.33 per day

- Clustered settlements with a high crowding index of 0.25 - 14 people
- Very low levels of water consumption of between 0-20 litres per capita per day
- Customers who do not have own connections (UWSD: 2008).

However, some of these NWSC categorisations of the urban poor do not match with what the community presented in chapter six of this study. For example, customers without their own connections do not necessarily mean such households are urban poor, but because of other factors that are discussed in chapter six like NWSC customers' service charter and lack of land or plot ownership within the urban area among others. Also the level of water consumption greatly depends on the household size and characteristics, regardless of being poor or well-off as this study revealed in chapter six.

Table 2.2: Drinking water technologies considered as improved and unimproved.

Improved drinking water sources	**Unimproved drinking water sources**
Piped water into dwelling, plot or yard	Unprotected dug well
Public tap/Stand pipe	Unprotected spring
Tubewell/Borehole	Cart with small tank/drum
Protected dug well	Bottled water*
Protected spring	Tanker truck
Rainwater collection	Surface water (river, dam, lake, pond, stream, canal, irrigation channels)

Source: WHO/UNICEF-JMP (2009)

*Bottled water considered improved only when the household uses water from unimproved source for cooking and personal hygiene.

2.5.0 Challenges in piped water provision

International figures for the cost of water for piped households varies widely from place to place; According to information by the World Water Commission (Serageldin: 1999) on a 1998 survey on water cost, values (expressed in cubic metres) in industrialized countries vary from US$0.31 in Canada to US$2.16 in Germany. Some values in the range are UK US$1.28, Finland US$0.77, United States US$0.40-0.80, and South Africa US$0.45. Information for 1996 values in some developing countries include: Algeria US$0.27-$0.57, Botswana

US$0.28-1.48, India US$0.01-0.82, Sudan US$0.08-0.10, Tanzania US$0.062-0.24, and Uganda US$0.38-0.59 (Ina *et la*: 2001).

The main water-related urban challenge in low- and middle-income nations remains ensuring adequate provision for water and sanitation and sustainable wastewater management (UN-HABITA: 2005). According to the (WHO/UNICEF) Joint Monitoring Programme (JMP), if the Millennium Development Goal (MDG) of halving the proportion of people without sustainable access to safe drinking water supply and basic sanitation is to be met by 2015, 961 million urban dwellers must gain access to improved water supply and over 1 billion must gain access to improved sanitation (WHO and UNICEF JMP: 2004).

Box 2.2: MDGs Requiring Water

Target 2: Halve, between 1990-2015 the proportion of people who suffer from hunger. *Target 5*: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate. *Target 10*: Halve, by 2025, the proportion of people without access to safe drinking water and basic sanitation. *Target 11*: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.

Source: UNDP 1999

The main challenge in the water sector in ensuring equity in service provision is seen from low service provision, unreliable and inadequate water provision to the urban areas. The national target of achieving 100% provision of safe water to urban areas is still a questionable issue in Uganda by 2015. Amuria town council is one of the urban areas expected to contribute to that target figure, however, it is still lagging behind as the study findings revealed in chapter five. Box 2.3 is an excerpt from the National News paper showing some of the gaps on water access in Uganda and the World water and sanitation situation. According to UNDP (1999), '*lack of access to safe and adequate water supplies contributes to ongoing poverty both through the economic costs of poor health and in the high proportion of household expenditure on water supplies in many poor communities, arising from the need to purchase water and/or time and energy expended in collection.*'

Box: 2.3 World water day celebrations 2012

Over 10 million Ugandans lack access to safe water

Publish Date: Mar 22, 2012

A woman draws water from a spring as her mate washes her hands.

By Godfrey Ojore

As the world marks World Water Day today, close to a quarter of Uganda's population lack access to safe water, according to research by Water Aid Uganda.

Most of those without access either live in hard-to-reach areas or parts of the country that have been affected by war.

Speaking during the launch of Water Aid/EU funded post-conflict project in Soroti, Alice Anukur, the country representative Water Aid Uganda said they are intervening to rescue communities from such places.

"The project we are launching has a goal of equitable and sustainable access to safe water, improved sanitation and hygiene for poor communities in post conflict areas of Uganda, Ankur said.

The five-year project worth €2,744,312 will benefit the five districts of Masindi, Pallisa, Amuria, Katakwi and Napak. The money is a grant from the European Union.

Anukur explained that the project that commenced its work nine months back will enable 36,786 communities to access safe water and 74,200 people to access good sanitation facilities within households, schools and health centers.

"In Napak, water coverage is at 49% while sanitation is less than 10%. This points to the

need for greater emphasis on sanitation improvement in the district with appropriate approaches," Anukur explained.

According to the findings of Water Aid, distance was regarded as a constraint to access to safe water supply in which over 60% of the rural household reported that they travel about 1.5km or more to access safe water.

The district leaders of the five districts were present during the official launch of the project at Soroti Hotel and expressed gratitude towards Water Aid for the support.

"Amuria is lagging behind in water coverage but we are grateful today to Water Aid for donating us 14 boreholes. Water coverage in Amuria is below 50%," Alfred Malinga the CAO Amuria said.

Water Aid expects at the end of the project to see more equitable and sustainable access to water, sanitation and hygiene and also empower poor and underserved communities that hold duty bearers accountable.

About 1.1 billion people the world over cannot access safe drinking water, and still 2.6 billion people lack adequate sanitation, according to UN reports.

And because of this massive sanitation figure, 1.8 million people die every year from diarrheal diseases, including 90% of children under the age of five.

Source: http://www.newvision.co.ug/news/629797-Over-10-million-Ugandans-lack-access-to-safe-water.html . Available on 22/03/12.[4]

2.6.0 Summary

This Chapter has tried to discuss theoretical framework focusing on actors. Also related literature concerning water issues particularly in Uganda like Governance, legal framework for the water sector and equity in water services have been presented. In Chapters Five, Six and Seven further discussions have been made on issues presented here.

[4] The New Vision National News paper, Kampala-Uganda

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, I explore the methods used to generate and analyze data. It also explains shortcomings from the field and how these were addressed.

Methodology explores the methods used to acquire knowledge about the study area of interest. Lynda and Myers (1995) further simplified it as a means by which knowledge is acquired and constructed within a discipline. Methodology is a coherent set of rules and procedures, which can be used to investigate a phenomenon or situation (Kitchin and Tate: 2000). There are a number of schools of thoughts on the best way to approach the relationship between society, space, place and environment whereby (Cloke *et al:* 1992 cited in Kitchin and Tate: 2000) argue that contemporary human geography is extremely diverse, both in the topics and in the diversity of approaches and methods of enquiry.

3.2 Qualitative methodology and why?

Qualitative data are generally unstructured and consist of words, pictures and sounds (Kitchin and Tate: 2000). Qualitative research produces findings not arrived by means of statistical procedures or other means of quantification (Strauss and Corbin: 1990). The term qualitative methods cover a confusing array of alternative research techniques, including those such as interviewing, participant observation and focus groups, and other less common methods such as diaries and auto-photography (Aitken and Wingate: 1993; Melanie and Claire: 2001). *'Qualitative research techniques are essential in exploring individual attitudes, perceptions, conceptions, priorities, especially when dealing with sensitive topics in depth'* (Anafi: 2000). Although I chose qualitative methodology, this does not mean quantitative methodology is of little value to this type of study. There are some reasons why I made such a decision basing on the following; the nature of my research objectives and research questions, '*Qualitative studies aim to provide illumination and understanding of complex psychosocial issues and are most useful for answering humanistic 'why?' and 'how?'(*Marshall: 1996), the little time and resources that are allocated for data collection and analysis, in fact here Melanie and Claire (2001) suggest that, *'it is important to bear in mind that the research that is written up by academics in journals and books is often conducted over several years and is commonly funded by substantial grants. As such, the scale of this sort of research is very different from the scale at which student research projects must be pitched.'*

Shank (2002) defines qualitative research as "a form of systematic empirical inquiry into meaning". By *systematic* he means "planned, ordered and public", following rules agreed upon by members of the qualitative research community. By *empirical*, he means that this type of inquiry is grounded in the world of experience. *Inquiry into meaning* says researchers try to understand how others make sense of their experience. Denzin and Lincoln (2000) claim that qualitative research involves an *interpretive and naturalistic* approach: "This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them."

The advantages of doing qualitative research include (Conger: 1998; Bryman et al: 1988; Alvesson: 1996):

- Flexibility to follow unexpected ideas during research and explore processes effectively;
- Sensitivity to contextual factors;
- Ability to study symbolic dimensions and social meaning;
- Increased opportunities;
    - To develop empirically supported new ideas and theories;
    - For in-depth and longitudinal explorations of leadership phenomena; and
    - For more relevance and interest for practitioners.

"Qualitative research allows the subjects being studied to give much 'richer' answers to questions put to them by the researcher, and may give valuable insights which might have been missed by any other method"(Rutman, :1996).

3.3 Sampling design

Sampling is the acquisition of information about a relatively small part of a larger group (Clifford *et al:* 2010). In the first place, I will elaborate on why Amuria Town Council was chosen as the study area before specifying the sampling selection for this study.

3.4 Amuria Town Council: Why it was selected

This is an important district core centre where most of the administrative offices are located, trading activities and residential place. It is the centre of the urban dwellers in Amuria district which is actively attracting rural population to settle through Rural-Urban migration, and much business activities are centred here. It has a total population of 5,136 people, and of which 3,121 people have access to water supply (DWD, MWE: 2010). This shows that still a large population of about 2,015 do not have access to water supply in the urban area

representing 39%. It made me to question about the category of individuals who are unable to access water and the reasons for such situations in the urban context.

The urban population requires adequate water supply to help in various activities that improve the wellbeing of people. For example small scale urban food production, promotion of household and individual hygiene, which results in better health due to reduction of water related diseases that may be avoided by using safe water. For many years, the urban centre had no piped water supply until the period between 2008 and 2010, when the project was established by Ministry of Water and Environment to supply water for the urban communities in this town.

It is also one of the first places where the piped water supply connection has taken place in the whole District of Amuria and this is why it was chosen among the many sub counties in Amuria district. Furthermore, being an insider or sharing similar characteristics with the people in the study area for example my knowledge on the local culture, local language, and social affiliations among others motivated the selection of this study area.

3.5 Sampling of study population

3.5.1 Purposive sampling

I used Purposive sampling; '*this is the most common sampling technique, [where] the researcher actively selects the most productive sample to answer the research question. This can involve developing a framework of the variables that might influence an individual's contribution and will be based on the researcher's practical knowledge of the research area, the available literature and evidence from the study itself*' (Bradley: 1992). Key informants were selected purposively from different institutions like the National Water and Sewerage Cooperation head office in Soroti, Employees of NWSC Amuria Sub-office, Government officials at local levels and CBOs representatives (11 key informants). This was done in order to acquire specific information of interest from such subjects with specific roles and responsibilities related to urban water supply.

3.5.2 Random sampling

Amuria town council is divided into four wards of which the household numbers are not equal. I used this technique to select households of interest to help provide required results from the study area. There was no systematic number designed representative to each ward; randomly 44 households including vendors were sampled for interviews while, 20 participants were selected randomly for focus group discussion from all the four wards.

3.5.3 Snowball sampling

This was important in finding out subjects of interest for the study. For example access to Local Council 1 chair persons; it was very useful to ask community members who were able to direct me to those leaders. At the time of collecting data about the total household numbers in each cell/ward, it was very important since these leaders knew each other; one could refer me to the other to gather the household information being kept by each leader for a specific cell/ward.

A total of 75 informants were sampled to participate in both interviews and focus group discussions. The list of households that I got from each LC 1 chairpersons helped me in selecting respondents to be included in the study. It is important to note that, in doing qualitative research, the number of respondents sampled is not always very big as elaborated by (Geiger: 1990; McCracken: 1988b; Crang and Cook: 2007); 'it is not the sheer number, 'typically' or 'representativeness' of people approached which matters, but the quality and positionality of the information that they can offer.' Also "*An appropriate sample size for a qualitative study is one that adequately answers the research question*" (Marshall: 1996).

Table 3.1: Summary on number of respondents by sector

Category of respondents	Number sampled	Status/position
Government officials		
NWSC officers	1	Area manager Soroti H/office
NWSC Employees	3	Field staff ATC office
Town Clerk	1	Town clerk ATC
DWO	1	District Water Officer Amuria
LCs 1 chairpersons	4	Akisim, Central, Okutoi & Alira wards chairpersons
Civil society organisations		
ADDA	1	Field staff
Community/public		Connected, disconnected and not connected-community
Beneficiaries and non beneficiaries of piped water	40	
Water vendors		
Wheeled carts operators	2	Sell water to individual households
Kioks operators	2	Operate public stand pipes and private stand pipes
Focus group discussions		
Central and Okutoi wards	10	Mixture of business, employees, peasants community and vulnerable groups e.g. elderly and women
Akisim and Alira wards	10	
Total	**75 respondents**	

3.6 Data collection methods

There are two types of data namely: Primary and secondary data. I obtained different secondary data and information from, National Water and Sewerage Cooperation (NWSC) offices, National newsletter (The New Vision www.newvision.co.ug), Amuria District Water Office-documents which were both published and unpublished, District Planning Office, Library books, internet sources were all helpful to me in providing data and information for this study. I collected primary data using methods like; in-depth interviews, observation, focus group discussions and photography. Also informal discussions with different people from the field helped me to acquire relevant information.

3.6.1 In-depth interviews

These are used to get participants to provide an account of their experiences, how they view their 'own world' and the meanings they ascribe to it (Melanie and Claire: 2001). Furthermore, Melanie and Claire explained that this method enables the researcher to cover a wide variety of topics, to clarify issues raised by the participants and to follow up unanticipated themes that arise. According to Crang and Cook (2007), interviewing has been a primary means through which ethnographic researchers have attempted to get to grips with the contexts and contents of different people's everyday social, cultural, political and economic lives. As a means of gleaming information from conversations within and between various research communities, interviews can range from the highly structured (akin to questionnaire survey in which the researcher asks predetermined questions in a specific order), through the semi-structured (where the researcher and participants) set some broad parameters to a discussion), to the relatively unstructured (akin to friendly conversation with no predetermined focus) (Crang and Cook: 2007).

I prepared both semi-structured and unstructured interview guides for general community and key informants respectively. A total of 55 respondents were interviewed, while 20 respondents drawn from four wards (Central, Akisim, Alira and Okutoi) participated in FGDs.

In order to identify the target respondents within the four wards, I used the household list got from the LC 1 Chairpersons of each ward, while relying on the guidance from field assistant who happened to be LC 1 chairperson from Central Ward. The reason why I decided to use him as my research assistant was mainly due to the political climate by the time of my fieldwork. The country had just concluded Presidential, Members of Parliament (MPs) and

Local Councils elections and by the time of my data collection, other political groups were staging demonstrations like "Walk to Work", it was not possible to conduct interviews and FGDs without political representative to assure the public that the purpose of the study was for academic interest and non political. I only allowed him to introduce me and the purpose of the study to the respondents and he could go and comeback later so that we could move to another household. This was done in order to allow respondents to discuss issues freely without fear, especially on those questions related to governance.

The first day, when I went to assess the field area and to test my interview questions without the use of research assistant, I was faced with a challenge from one respondent who asked me, *"....you have come to take our opinions to help those leading us to benefit more?"*, even if I had introduced myself and the purpose of the study to him. This later made me to modify my interview questions and opt for Local Council 1 chairperson as my research assistant in order to create a favourable environment for my data collection.

The interviews took place at different places; at household, water collection points, business (shops and restaurants) and work place for Key informants. It was conducted both during week days and weekends. Those who were busy during the working days were appointed for interviews on Saturdays with exception of Sundays. However, interviews held at different places had also different effects to the data collected; for example, at household level respondents were very open to discuss issues related to Governance than those at shops, restaurants, and work places. In order to address this challenge, I could make appointments with those respondents to meet at an appropriate time of the day when customers were not many like at 2pm for restaurant workers and 10am shop operators. Also rephrasing my questions to the respondents helped them to understand the point and made them to answer the questions to my study.

3.6.2 Focus group discussions (FGDs)

For this method the researcher brings together a small number of subjects to discuss the topic of interest. The group size is kept deliberately small, so that its members do not feel intimidated but can express opinions freely. A topic guide to aid discussion is usually prepared beforehand and the researcher usually 'chairs' the group, to ensure that a range of aspects of the topic are explored. The discussion is frequently tape-recorded, then transcribed and analysed (Rutman: 1996).

This technique share similar advantages with interviewing but have the added benefit of enabling the researcher to explore how meanings and experiences are negotiated and contested between participants, (Melanie and Claire: 2001). It is also important to note the point illustrated by (Morgan: 2001, in Hollander: 2004; Crang and Cook: 2007); *'it is certainly true that the same people might say different things in individual interviews than they would in a group discussion, but that does not mean that one set of statements is distorted and the other is not.'* This kind of statement recommends that, during focus group discussion one has to be careful of social context; whereby people's interactions in terms of culture, language, gender, age and socio-economic among others can shape the way and type of data collected using FGDs.

Two FGDs were conducted for this study, 10 respondents were selected to participate in each FGD; making a total of 20 respondents. 5 respondents were selected from each four wards (Akisim, Central, Okutoi and Alira). Gender consideration was taken into account, 3 females were selected in each ward and 2 males. This was based on the fact that women have a greater task in addressing household water demands, thus 12 female participants were selected and 8 male participants in all the four wards. The selection was done randomly, while considering socio- economic status of the participants. Both business persons especially from those activities that involve use of water like local beer brewers, restaurants and hair dressers in saloons to mention but a few were the target groups, vulnerable persons like the elderly, widowed women and disabled; and employees from different disciplines were selected to participate in FGDs. Those selected to participate in FGDs were alerted earlier through the head of the household where necessary to obtain their conscience for participation in the meeting.

Focus group discussions were held in Centarl and Akisim ward. The leaders of each ward provided us with a venue where the community had already identified as a common meeting point. It was mostly under mango trees. In each FGD, the ward chairperson had to introduce me and my research assistant and welcomed the participants, and this helped to build good rapport between me and the participants. One member from 10 participants was chosen by the participants to act as the secretary, while I moderated and guided the discussion in line with the research questions. The major issues of discussion included among others, socio-economic impacts of piped water, challenges faced, factors determining access to piped water, poverty issues and perceptions of participant towards governance effectiveness in service delivery. The later issue was not easily discussed since the number of respondent

drawn for FGDs were from different disciplines including government employees. However, due to my role of moderating the discussions, it was a good opportunity for me to prove for more information as to why some issues were not coming out openly and freely from the participants. I was also able to generate information through observation of 'body language' of some participants when the topic of discussion attracted their interests and feelings, for example some could over react on certain issues than others. Body expressions helped me to identify areas of focus and those that could provide hidden issues causing such behaviours by participants.

Even if the number of women outnumbered men, men dominated the discussions. To address this challenge, I employed a technique of rehearsing the questions for the women to allow them give their input (views) so as to avoid bias and limited information.

3.6.3 Observation

Wolcott (1995, cited in Kitchin and Tate: 2000) suggests that, the difference between interviewing and observation is that in observation you watch as events unfold whereas with interviews 'you get nosy'. Observation relies on the observer's ability to interpret what is happening and why. Observation then *'entails the systematic noting and recording of event, behaviours, and artefacts in a social setting'* (Marshall and Rossman: 1995). There are different forms of observation like open/covert and participatory observation. Each of these has its' advantages and disadvantages depending on the situation under study, and how and when someone apply them.

This technique was very important when I needed to verify the information got from both the interviews and FGDs about those observable phenomenon like; disconnected piped water lines, unprotected water sources accessed by the community, patterns of piped water distribution and non-repaired Borehole sources including other economic activities that the community is engaged in were observed and noted in the field diary. Also taking of photographs on some particular activities supported observation by visualising the actual situation on the ground. However, some community members were opposed to taking photographs especially at the boreholes, I had to introduce myself, objectives and the purpose of taking the photos during my fieldwork and so they could allow me do so.

3.7 Issues of Reliability and Validity

Research as defined by many authors (Gay: 1996; Patton: 2001; Creswell: 2003; McMillan and Schumacher: 2006; Best: 2006; and Muhammad, *et al*: 2008) is the systematic

application of scientific method to the problem under consideration. Therefore, without rigor research become fiction and loses its worth. The rigor can be ensured only by considering validity and reliability in all kind of research methods. The most important issue in the research is to ensure reliability and validity (Muhammad, *et al*: 2008).

3.7.1 Reliability

According to Muhammad, *et al*. (2008), the term 'Reliability' is a concept used for testing or evaluating quantitative research, the idea is most often used in all kinds of research. The idea of testing in qualitative paradigm is viewed as a way of information elicitation. Therefore most important test of any qualitative study is its quality. A good qualitative study can help us to "understand a situation that would otherwise be enigmatic or confusing" (Eisner: 1991). Stenbacka, (2001) viewed reliability as "purpose of explaining" in quantitative approach and "generating understanding" in qualitative approach to research. The difference in purposes of evaluating the quality of studies in quantitative and qualitative research is one of the reasons that the concept of reliability is irrelevant in qualitative research. According to Stenbacka, (2001) "the concept of reliability is even misleading in qualitative research, if a qualitative study is discussed with reliability as a criterion; the consequence is rather that the study is no good".

The most suitable terms in qualitative paradigms are Credibility, Neutrality or Confirmability, Consistency or Dependability and Applicability or Transferability (Lincoln & Guba: 1985). To be more specific with the term of reliability in qualitative research, Lincoln and Guba (1985) used "dependability", in qualitative research which closely corresponds to the notion of "reliability" in quantitative research. They further emphasize "inquiry audit" as one measure which might enhance the dependability of qualitative research. In the same layer, Clont (1992) and Seale (1999) endorse the concept of dependability with the concept of consistency or reliability in qualitative research. The consistency of data will be achieved when the steps of the research are verified through examination of such items as raw data, data reduction products, and process notes (Campbell: 1996).

To ensure reliability in qualitative research, examination of trustworthiness is crucial. Seale (1999), while establishing good quality studies through reliability and validity in qualitative research, states that the "trustworthiness of a research report lies at the heart of issues conventionally discussed as validity and reliability". When judging qualitative work, Strauss

and Corbin (1990) suggest that the "usual canons of 'good science'...require redefinition in order to fit the realities of qualitative research".

In contrast, Stenbacka, (2001) argues that since reliability issue concerns measurements then it has no relevance in qualitative research. She adds the issue of reliability is an irrelevant matter in the judgment of quality of qualitative research. To widen the spectrum of conceptualization of reliability and revealing the congruence of reliability and validity in qualitative research, Lincoln and Guba (1985) states that: "Since there can be no validity without reliability, a demonstration of the validity is sufficient to establish the reliability". Patton (2001) with regards to the researcher's ability and skill in any qualitative research also states that reliability is a consequence of the validity in a study.

Given the above views related to reliability, I have not detached myself from ensuring reliability of this study. Though the effects of this concept in any research are not clearly established since different scholars and writers view it differently when applied to qualitative research.

3.7.2 Validity

Kvale (1989) identified three approaches to validity in qualitative research are validation as 'investigation', as 'communication', and as 'action'. Researchers rely upon experience and literature to address the issue of validity, generalizability, and reliability. It is specified in quantitative paradigm but confusing in qualitative one. In qualitative research validity has to do with description and explanation, and whether or not the given explanation fits a given description (Muhammad, *et al*: 2008).

Qualitative researchers are of the view that the term validity is not applicable to qualitative research, but at the same time, they have realized the need for some kind of qualifying check or measure for their research. For example, Creswell & Miller (2000) suggest that the validity is affected by the researcher's perception of validity in the study and his/her choice of paradigm assumption. As a result, many researchers have developed their own concepts of validity and have often generated or adopted what they consider to be more appropriate terms, such as, quality, rigor and trustworthiness (Davies & Dodd: 2002; Lincoln & Guba: 1985; Seale: 1999; Stenbacka: 2001).

The issue of validity in qualitative research has not been disregarded by Stenbacka (2001) as she has for the issue of reliability in qualitative research. Instead, she argues that the concept of validity should be redefined for qualitative researches. Stenbacka (2001) describes the

notion of reliability as one of the quality concepts in qualitative research which "to be solved in order to claim a study as part of proper research".

In searching for the meaning of rigor in research, Davies and Dodd (2002) find that the term rigor in research appears in reference to the discussion about reliability and validity. Davies and Dodd (2002) argue that the application of the notion rigor in qualitative research should differ from those in quantitative research by "accepting that there is a quantitative bias in the concept of rigor, we now move on to develop our re-conception of rigor by exploring subjectivity, reflexivity, and the social interaction of interviewing".
This calls towards the triangulation in one sense and reflexivity in McMillan & Schumacher (2006) point of view as strategies for enhancing validity. Creswell (2003) described that "by triangulate it means that use different data sources of information by examining evidence from the sources and using it to build a coherent justification for themes. Whereas reflexivity is rigorous self scrutiny by the researcher throughout the research process and is an important procedure for establishing credibility." In this study, I have tried to be more reflexive throughout my data collection, analysis and presentation of results. Also through integration of some quantitative data from secondary sources, and at my analysis encouraged me to be reflexive in ensuring validity of this study.

3.8 Positionality

It is important to be aware of one's own position in an interview setting, and reflect on how this can influence the interaction between the researcher and the informant. As Smith notes;

> *We must recognize and take account of our own position, as well as that of our research participants, and write this in to our research practice in ways that are sensitive to the difference or presence makes in the research, and how the process of research itself can shape social relations (Smith: 2010).*

Aspects of our identity (factors such as age, gender, education, or culture), may determine the impression the informant has of the researcher, which again may determine what type of information the researcher is able to collect (Smith: 2010). These factors may contribute to enhance both similarities and differences. The fact that I am a student from AAU who showed interest in the informants work and/or home town (Amuria), might have contributed to the informants perceiving me as harmless, the informants may not have place me in an elevated position. This made it easier for the informants to open up, and at the same time uphold an independent and active position throughout data collection techniques like the

interview and FGDs. However, being an insider, it might have affected the amount of data expected since informants may tend to assume that I am part of them and have the same experiences on their situations. However, all these were considered in a much reflexive way in order to address research ethical issues like; duty not to cause harm, informed consent and informants' anonymity among others . Sufficient introduction of, who I am and the research objectives to the respondents played a good role in building trust and good relations during the research process.

3.9 Data analysis

Analysis is a creative, active, making process that can be done more or less accountability and transparency (Bailey et al: 1999; Crang: 2001; Rennie: 1998; Crang and Cook: 2007). I have used mainly qualitative approaches of data analysis. However, some quantitative data from secondary sources has been incorporated in the analysis. This has been done to ensure validity and reliability of the results. Triangulation of analysis methods like use of information from different sources as Creswell (2003) described that "by triangulation it means that use different data sources of information by examining evidence from the sources and using it to build a coherent justification for themes", is one way that I used in addressing issues of reliability and validity. Qualitatively, I developed themes and categories from the research questions that have been interpreted descriptively as Dey (1993) in (Kitchin and Tate: 2000) argues that qualitative data analysis consists of the description of data, the classification of data, and seeing how concepts interconnect. However, some quantitative data are presented as tables, or graphs and pi-chats. For example demographic information, education, piped water connections among. Use of Microsoft programs like; drawing and inserting tables, and Microsoft excel helped in constructing tables and graphs.

CHAPTER FOUR: THE STUDY AREA

4.1 Introduction

Amuria District is located in the northern part of the Eastern Region of Uganda and forms part of the Teso sub-region. Amuria District Local Government came into being in July 2005 through an Act of Parliament. It is comprised of two counties of Kapelebyong and Amuria which were originally part of Katakwi District. Amuria County is made up of seven LLGs which include Amuria Town Council and six rural lower local governments of Abarilela, Asamuk, Kuju, Orungo, Morungatuny and Wera. Kapelebyong County is made up of Obalanga, Acowa, and Kapelebyong sub counties. All the LLGs have functioning local councils made up of elected councillors with a chairperson each.[5]

4.2 Population

According to 2002 census, the total population of Amuria was 180,022 of which 57% were children below 18 years. The average annual population growth rate was 8.2% for the period 1991 to 2002 (UBOS: 2002). The 2008 population projection for the district was at 315,500. The annual population growth rate of the district stands at 8.2%, a rate far higher than the national average of 3.2%. Children below 18 years comprise 57% of the population, while female to male sex ratio is 100:96 (Ssemakula, *et.al:* 2010).

Table 4.1: Amuria demographic indicators and functional age group based on 2002 census

Indicator	Description	Percentage
Population	180, 022 people	
Average annual growth rate	8.2%	
Age distribution	Under 1	5
	0-5	29
	6-12	22
	15-24	18
	18-30	21
	60+	5
Sex ratio	Male : Female	96 : 100

Source: Amuria District Development Plan (ADDP) 2010-2012.

Amuria town council which is the case study currently has a population of **5,136** living in the urban area (DWD, MWE: 2011).

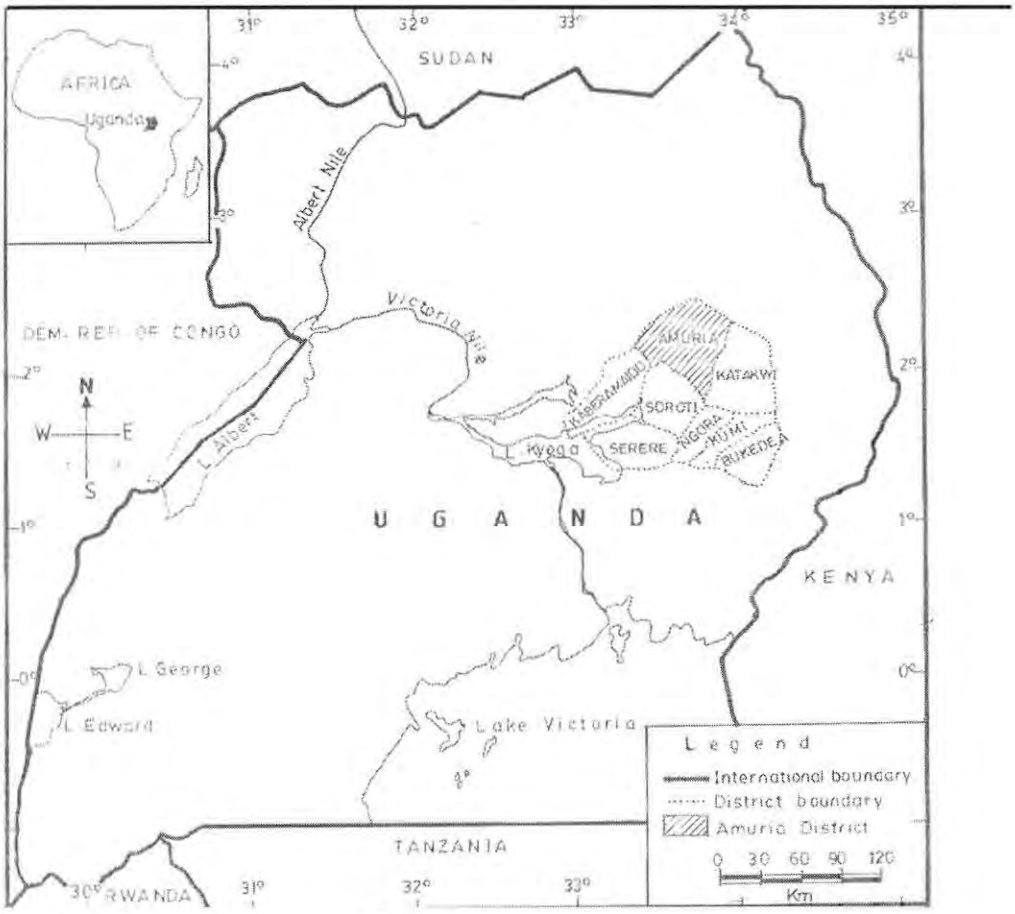
[5] http://www.amuria.go.ug/. Amuria district local government website where you can find the district profile

Table 4.2: Amuria district population figures 2008-2010 with projections of 2011-2012

Year	Male	Female	**Total**
2008	136,700	154,500	**291,200**
2009	145,400	165,500	**310,900**
2010	160,900	183,300	**344,200**
2011	174,500	199,500	**374,000**
2012	189,300	217,100	**406,400**

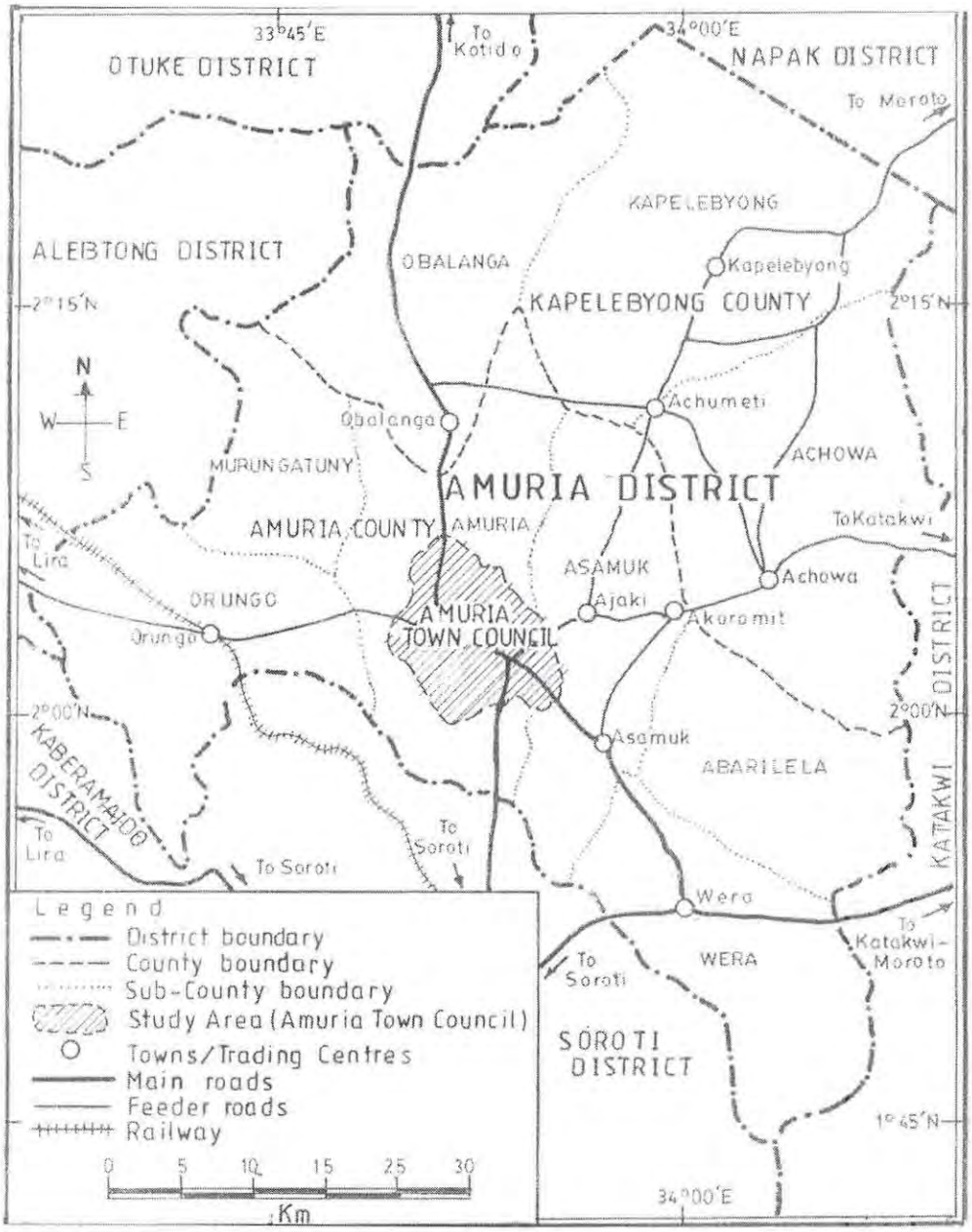
Source: Amuria District Local Government statistic office 2011

Figure 4.1: MAP OF UGANDA SHOWING LOCATION OF AMURIA DISTRICT



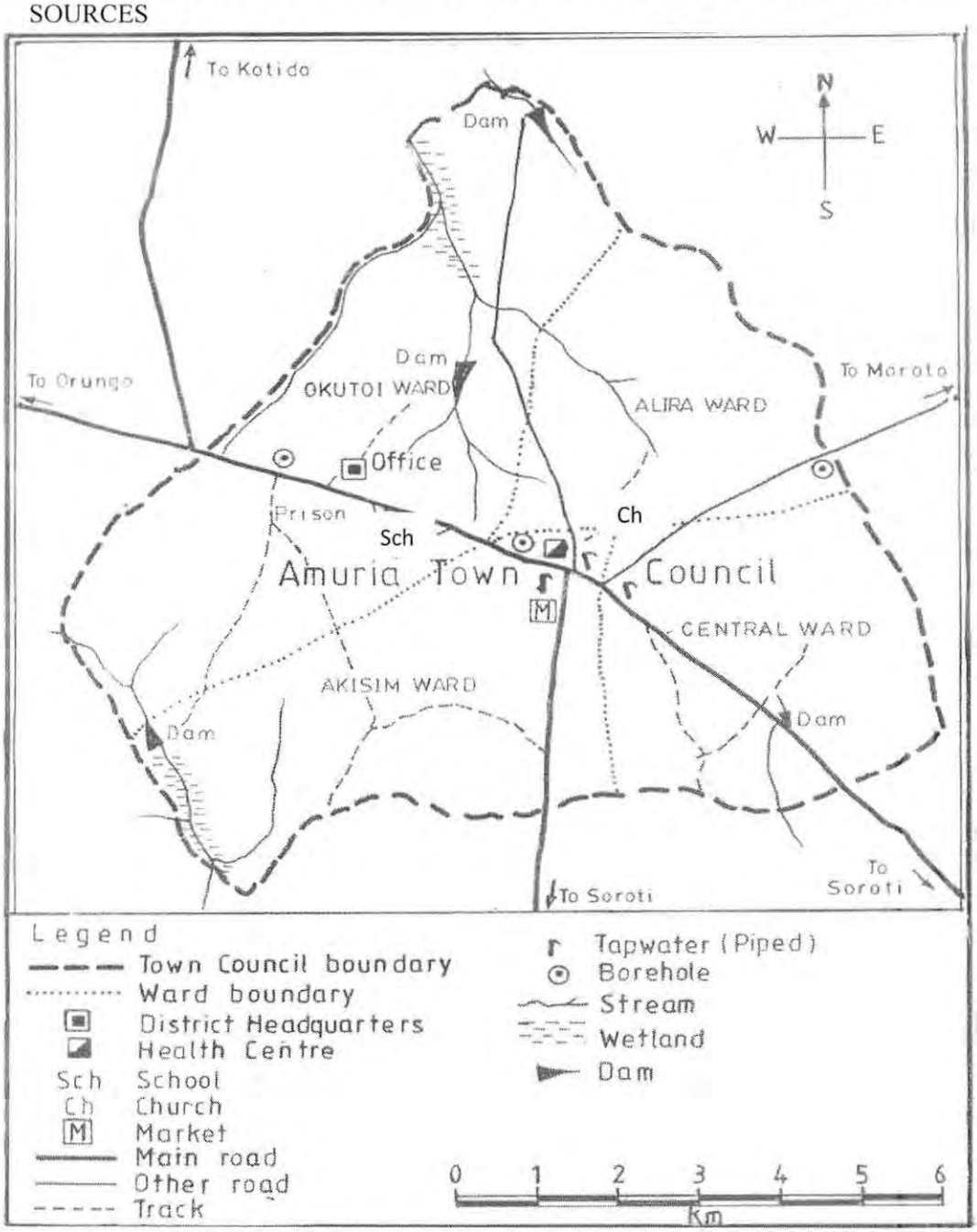
Source: Uganda Government Districts By 2011

Figure 4.2: MAP OF AMURIA SHOWING THE STUDY AREA



Source: Uganda Government Districts By 2007

Figure 4.3: MAP OF AMURIA TOWN COUNCIL SHOWING MAJOR WATER SOURCES



Source: Department of Natural Resources Amuria District Local Government June 2011

4.3 Rainfall and Temperature

In Uganda, rainfall is most sensitive climate variable as it affects many social and economic activities. The eastern region including the districts of Palisa, Mbale, Kapchorwa, Kumi, Soroti, Katakwi and Amuria receive moderate rainfall. The probability of getting above normal rainfall is high (over 20 per cent) over most parts of the eastern areas (UN-Water: 2006).

Amuria receives annual rainfall which varies from 1000-1500mm (UBOS: 2002). The high variability of rainfall during 2007 resulted to high incidences of floods especially over the north eastern parts of the country (NEMA: 2007).

Uganda experiences moderate temperature throughout the year. The country is pleasantly cool with a long-term mean temperature of 21 degrees celecious. Over a year, mean temperatures range from a minimum of 15 degrees celecious in July to a maximum of 30 degrees celecious in February. The highest temperatures of over 30 degrees celecious are experienced in the north and eastern parts of the country (UBOS: 2006; NEMA: 2007)

4.4 Soils

According to NEMA (1998) classified the soils as *Ferrasols (Ferrallitic soils)* that are highly weathered with low cation exchange capacity (CEC) and negligible mineral reserves. They largely depend on bases held in the clay and organic complexes for their fertility, which in turn depends on favourable rainfall and maintenance of the top soil.

4.5.0 Socio-economic indicators

4.5.1 Economic Activities

Economic activity refers to work, which involves the production of goods and or services for sale, own consumption or exchange. This excludes household duties like caring for the sick, cooking food and fetching water. The major economic activities in Amuria district include; Subsistence farming, small scale business enterprise, Employment income, Property income, family support, water vending, brick making among others.

4.5.2 Education

The status of education in Amuria District is characterised by stark variations in the indicators especially with regard to the gender divide. Indicators of literacy, enrolment, school dropout, and retention tend to disadvantage the females in contrast to their male counterparts.

Table 4.3: Education Indicators

Attributes	Male	Female
Enrolment in primary schools	34, 685	32,851
Teachers employed in primary schools	870	240
Population that has never attended school (%)	29.1	70.9
Population that has attended school (%)	53.8	46.2
Incomplete primary school (P1-P6) (%)	46.8	53.2
Completed primary (P7) (%)	66.1	33.9
Completed secondary (%)	81.1	18.9

Source: Amuria District Development Plan 2010-2012; Ssemakula, *et.al*: 2010.

4.5.3 Roads

Amuria District has a road network covering a distance of 580 km. This includes trunk roads, feeder roads and community roads. The maintenance of the roads has been a big challenge to the district, especially after the occurrence of the floods in the third quarter of 2007. The floods washed away road surfaces, bridges and access to a number of places was affected, making 54% of the feeder roads and 79% of the community roads inaccessible. The poor state of the roads has wider implications for accessibility to other services by the communities and inability to tap economic opportunities available in outside markets[6] (Ssemakula, *et.al*: 2010).

4.5.4 Health

The health situation in the district is characterized by a high disease burden with malaria (54%) and acute respiratory infection (15%) as the major causes. Furthermore, common illnesses such as diarrhoea (8%), intestinal worms (6%), trauma (5%), and skin infections (3%) contribute to this burden (Ssemakula, *et.al*: 2010).

4.5.5 Water and sanitation

In Amuria district, access to safe water and sanitation facilities is equally low, with latrine coverage at only 24% while piped water is only accessed by the population in Amuria Town Council. The rest of the population depends on protected springs, deep boreholes, and shallow wells (installed with hand pumps). The major challenges for water provision mainly

[6] Amuria District Development Plan 2010-2012

emanate from the inadequate funding accorded to the sector and the district (Ssemakula, *et.al*: 2010).

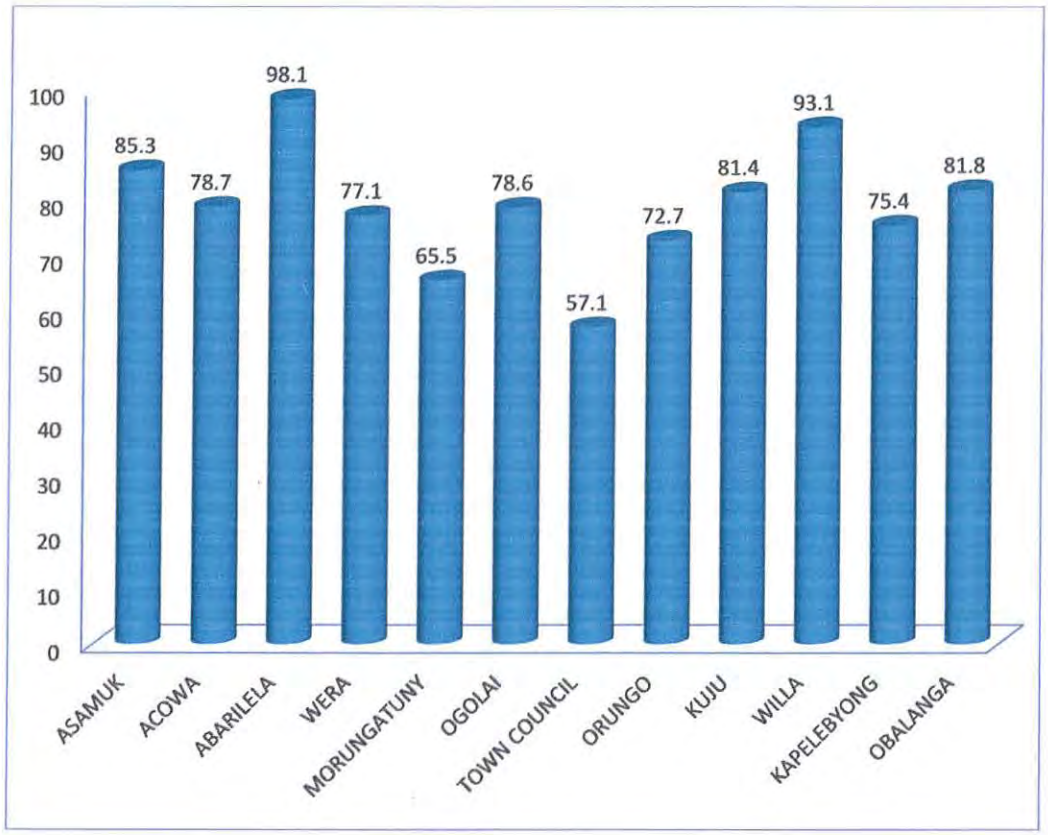
Table 4.4: Amuria District Local Government Functionality of water points for Amuria Town Council as at August 2011[7]

Protected springs			**Shallow wells**				**Deep water sources (Boreholes)**			
F	NF	%	F	NF	T	%	F	NF	T	%
0	0	0	2	2	4	50	8	6	14	57.1

Source: Amuria District Water Office data base (August 2011)

F= Functionality NF= Non-functionality T= Total

Figure 4.4: Showing the Percentage Functionality of Deep Water Points per Sub County* as at August 2011 in Amuria District.



Source: Amuria District Water Office data base (August 2011)

[7] This table has been modified by excluding other sub counties (11) with the aim of focusing on ATC situation; but the graph shows all the sub counties with the percentages on Borehole functionality.

* Newly created sub counties include; Ogolai from Morungatuny and Willa from Kuju.

4.5.6 Poverty

In Uganda, the concept of poverty takes several dimensions. In 1997, at the launch of first Poverty Eradication Action Plan (PEAP), Government for policy purposes defined poverty as lack of access to basic necessities of life (food, shelter, clothing and other needs like education and health). When the first Participatory Poverty Assessment (PPA1) was conducted in 1998, poverty was defined as inability to satisfy a range of basic human needs, and the lack of employment and survival opportunities stemming from powerlessness, social exclusion, ignorance and lack of knowledge, as well as material resources. Powerlessness was defined as lack of participation in decision making at community and household level, especially by women. The second PPA confirmed this definition. During the first Community Country Assessment (CCA) of the United Nations agencies working in Uganda, communities also recognized that poverty is not a linear event but is cyclical in nature depending on a number of variables (MFPED: 2003).

There is a high incidence of poverty in Amuria district with over 63%[8] of the population living below the poverty line, a situation attributed to insecurity, changing weather patterns and lack of access to markets. Poverty is predominant among the rural farmer population which forms a big proportion of the district population (over 90%) who depend on cultivation and livestock keeping as the major source of livelihood (Ssemakula, *et.al*: 2010).

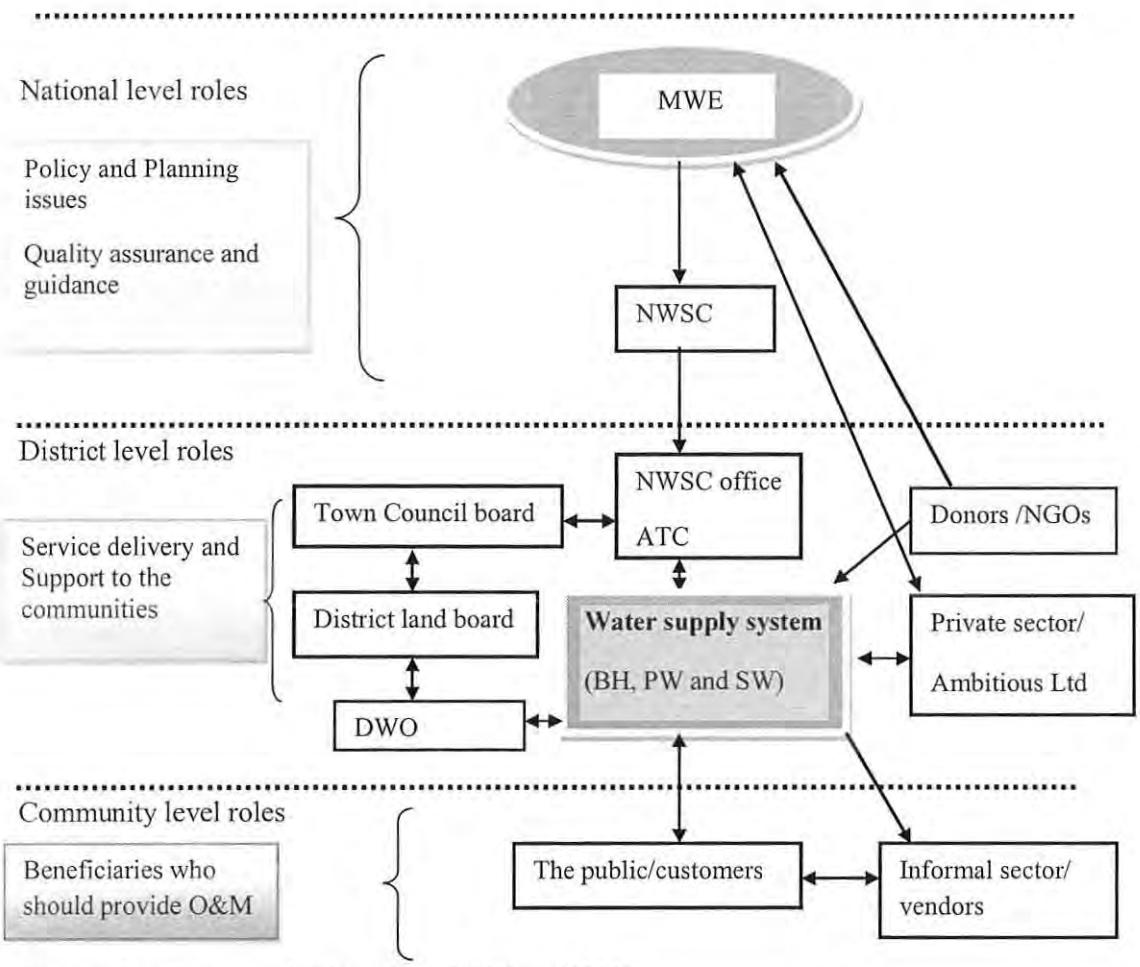
[8] Amuria District Development Plan 2010-2012

CHAPTER FIVE: THE ROLE PLAYED BY DIFFERENT ACTORS AND EFFECTIVENESS OF THE URBAN WATER PROJECT

5.1 Introduction

This chapter discusses the roles of different actors involved in water supply system and thereafter presents the issues of performance indicators through the assessment of effectiveness, operational efficiency and cost effectiveness of piped water supply. Finally, I present the perceptions of actors on governance effectiveness.

Figure 5.1: Institutional framework for water provision at ATC by different actors



Source: Own construction based on field data (2011)

Note: BH= Borehole PW= Piped water SW= Shallow Wells

Decentralisation has had its roots in the need for effective service delivery at all levels. Uganda implemented the policies of decentralisation in 1992, establishing LLGs, institutional and civil service reforms among other aspects. For this reason, water sector has different structures dealing with water and sanitation service provision starting from the national to the local and community level.

5.2.0 Role of actors at the National level towards piped water supply in ATC

5.2.1 Ministry of Water and Environment (MWE)

This ministry has the overall mission:

"*To promote and ensure the rational and sustainable utilisation, development and effective management of water and environment resources for socio-economic development of the country*". MWE has the responsibility for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management. It also monitors and evaluates sector development programmes to keep track of their performance, efficiency and effectiveness in service delivery.

The study found that, in 2008, MWE signed contract with a private contractor; Ambitious Construction Company Limited (ACCL) under the project *Water and Sanitation Development Facility-East* (WSDF-E) to provide piped water to Amuria district at a cost of 2,121,432,469UGX. The contract work commenced September 2008 and completed 2010 July and the project was handed over to MWE by ACCL. MWE was then required to hand over the project to National Water and Sewerage Cooperation. However, by the time of this study, NWSC had not yet received powers from MWE to fully manage Amuria piped water project as mandated in the legal framework for the water sector.

5.2.2 National Water and Sewerage Cooperation (NWSC)

This is a parastatal that operates and provides water and sewerage services for large urban centres across the country. NWSC's activities are aimed at expanding service coverage, improving efficiency in service delivery and increasing labour productivity. Key among its objectives is to plough back generated surpluses for infrastructure improvements and new investments.

NWSC deals with issues of water and sewage services, but for the case of Amuria town this study revealed that, there is no sewerage system installed yet. From the interviews held with the Area Manager Soroti Head office, NWSC is currently responsible for extension of water

pipes to new customers, collection of water revenue and providing general services regarding urban water in ATC. The study also found that, NWSC Amuria Sub-office operates without having data management equipments like computers. All data and information necessary for the functioning of the office were still accessed from Soroti NWSC Head office.

The NWSC Customer Service Charter (CSC) states the following new connection procedure;

- Customers shall be offered application forms free of charge at any NWSC office
- The customers should provide documentary of ownership of the property where the service is required
- Obtain signature of landlord if applicant is a tenant or of a trustee if the applicant is a minor
- Attach a passport size photograph or a stamp on the forms in case of individual persons and corporate bodies respectively
- Obtain written permission from the local authority if the connection will involve excavating a road
- Obtain written permission from the owner if connection pipes are to pass through another person's property
- Customer shall then return dully filled application forms with required attachments to the office
- NWSC provides connections free of labour and materials, costs for water and sewerage services for distances up to 50 metres and 60 metres respectively. The cost of any extra length shall be borne by the customer in accordance to the existing tariff.
- Every new service connection will attract a fee which is in accordance with the existing tariff.
- NWSC provides every new connection with a metre free of charge
- New connections are only effected by authorised NWSC staff.

Metre reading and Collection of payment

NWSC shall read all metres every 30days. Where this is not possible, a reasonable estimate will be determined using previous consumption trends of the last three consecutive correct readings. The consumed units will be written on the bills and where a reading is estimated, the same will be indicated on the bill, where bills are estimated, the accounts shall be automatically corrected upon receipt of actual readings in subsequent months.

Cash payment to NWSC office and newly introduced Short Message Service (SMS) using mobile phones.

Current connection charges and Bill distribution

Each meter is charged 2,300UGX multiplied by the total required distance to be connected, and then the final cost is determined. For instance 50m times 2,300UGX equals to 115,000UGX. The total charges depend on the distance from the main line to the intended new site to be connected. Water bills are distributed to customer's premises by the 5th of every month.

Table 5.1: NWCS Water Unit charges for different categories of uses as per August 2011

Category of use	Unit cost charges (UGX)	Value added tax (VAT)
Commercial connections (contraction sites, shops & hotels)	2,504	18%
Domestic connections (yard pipe stands)	1,700	18%
Public stand pipes	1,027	18%
Institutions (schools and churches)	2,041	18%

Source: NWSC ATC sub-office August 2011.

Public stand pipes and domestic connections are relatively subsidized to cater for low income groups afford water for each bill charges per unit. However, new connection payments do not have any subsidies made by NWSC and all those intending to make new connections whether individuals or institutions are requested to meet the same charges regardless of income levels.

Disconnection and Reconnection

The corporation does not intend to disconnect any of the customers but shall do so if NWSC get proof of illegal use, a customer fails to pay the water services 15days after the billing date, and upon the customer's request. Disconnections for non payment shall be preceded with disconnection notice seven days before the disconnection is made.

- A customer that has been disconnected for non-payment will be reconnected after clearing his/her outstanding balance to zero and upon payment of the standing reconnection fee at the time.

- Customers disconnected due to illegal use will be connected legally after they have paid the appropriate penalty and upon successfully meeting NWSC terms.
- Accounts disconnected on the customer's request will be reconnected upon the account holder's request and after paying the reconnection fee.
- In all the above cases, NWSC shall effect the reconnections within in six hours of the customer meeting all the requirements.

These NWSC procedures reflect the current operation of the institution using the CSC which I accessed August 2011 from Soroti NWSC branch office, and some of the conditions outlined above have been changing depending on NWSC plans and economic climate.

Table 5.2: Summary of household piped water connections per ward in ATC

Name of Ward	**No. of H/H**	**Connected H/H before disconnection**	**Disconnected H/H**	**Functional after discon'n**
Central	669	143	26	117
Akisim	327	50	12	38
Alira	363	36	9	27
Okutoi	216	none	-	-
Total	**1,575**	**229**	**47**	**182**

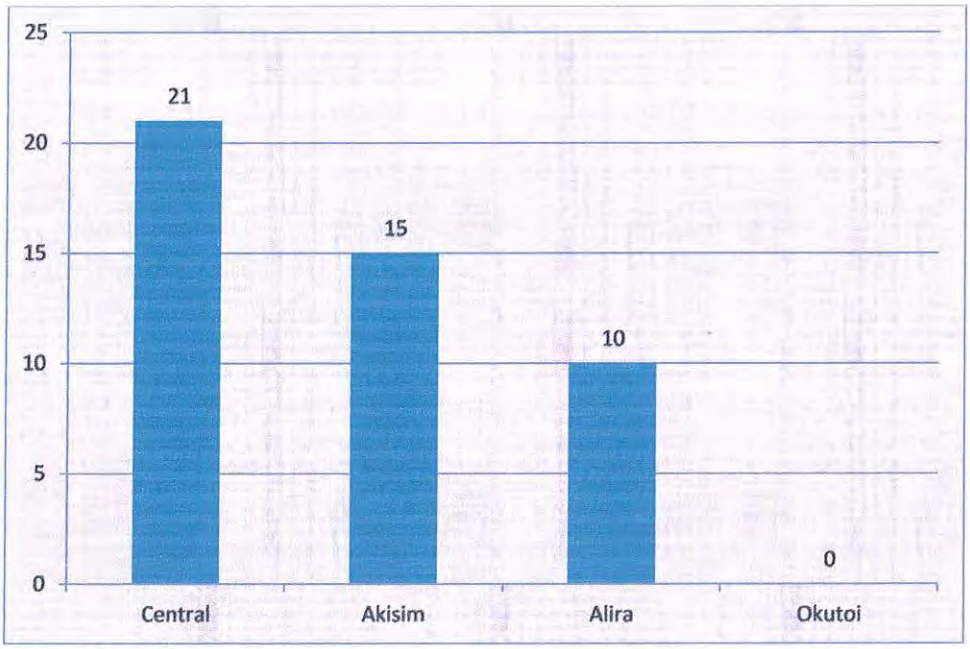
Source: Field data August-September (2011).

Table 5.2 represent the total household pipe water connections for four Wards selected in this study. Central ward has the highest number of households (669) with relatively high numbers of piped water connections (143). While Okutoi ward which has a total of 216 households does not have piped water connections. Akisim ward though having a lower number of households (327) than Alira ward (363), has more connections (50) and (36) respectively because, Akisim ward is being occupied with different economic activities like daily market, institutions and different business activities that require use of piped water.

Figure 5.2 depicts Central Ward having a lead at 21 percent, followed by Akisim 15 percent, Alira 10 percent and Okutoi has no connections made yet (0 percent). This shows unequal distribution of services and actually low service provision. Central ward takes the lead simply because there are many households proportional to other wards, but not as a result of having more connections. Also Central ward is one of the wards occupied with business activities

like restaurants, shops and commercial residential houses. Okutoi ward is the least with no connections mainly due to its marginal location, being occupied by mainly low-income households and with poor infrastructural development like road network.

Figure 5.2: Percentage of piped water connections per Ward in ATC



Source: Field data (2011)

5.3.0 Contributions of local government institutions and other stakeholders

5.3.1 Town Council Board

The local government especially Town council office played a key role in guiding the private sector during the construction of the water facilities. This was done through collaboration, for instance, issuing of licenses to the land owners so that they could have evidence of land/plot ownership as one of the requirements for one to qualify for water connection. Interviews with the Town Clerk revealed that, for most of the people who had no land title or any evidence of ownership missed the chance of being connected to piped water.

Town Council board is also charged with the role of planning for the provision of services like public infrastructures such as roads within the urban area. However, road network is still poorly developed with some wards not accessible by NWSC services. Okutoi ward is one of the examples with poor or lacking road networks. NWSC only makes connections of water

lines along the road reserves, outside that the connections will be considered illegal according to National Water Policy 1999. An interview with the Town Clerk expressing the challenge, he said.

> *We only rely on government grants from the central administration; it is very difficult to deliver services when you have limited funds...our revenue base at the district can't meet even the needs of one sector if i can guess. Conditional grants also come with their plans attached, so it becomes hard to divert such funds to provide roads if for example what is intended by the central government is health service delivery (Town Clerk, ATC 08/08/2011).*

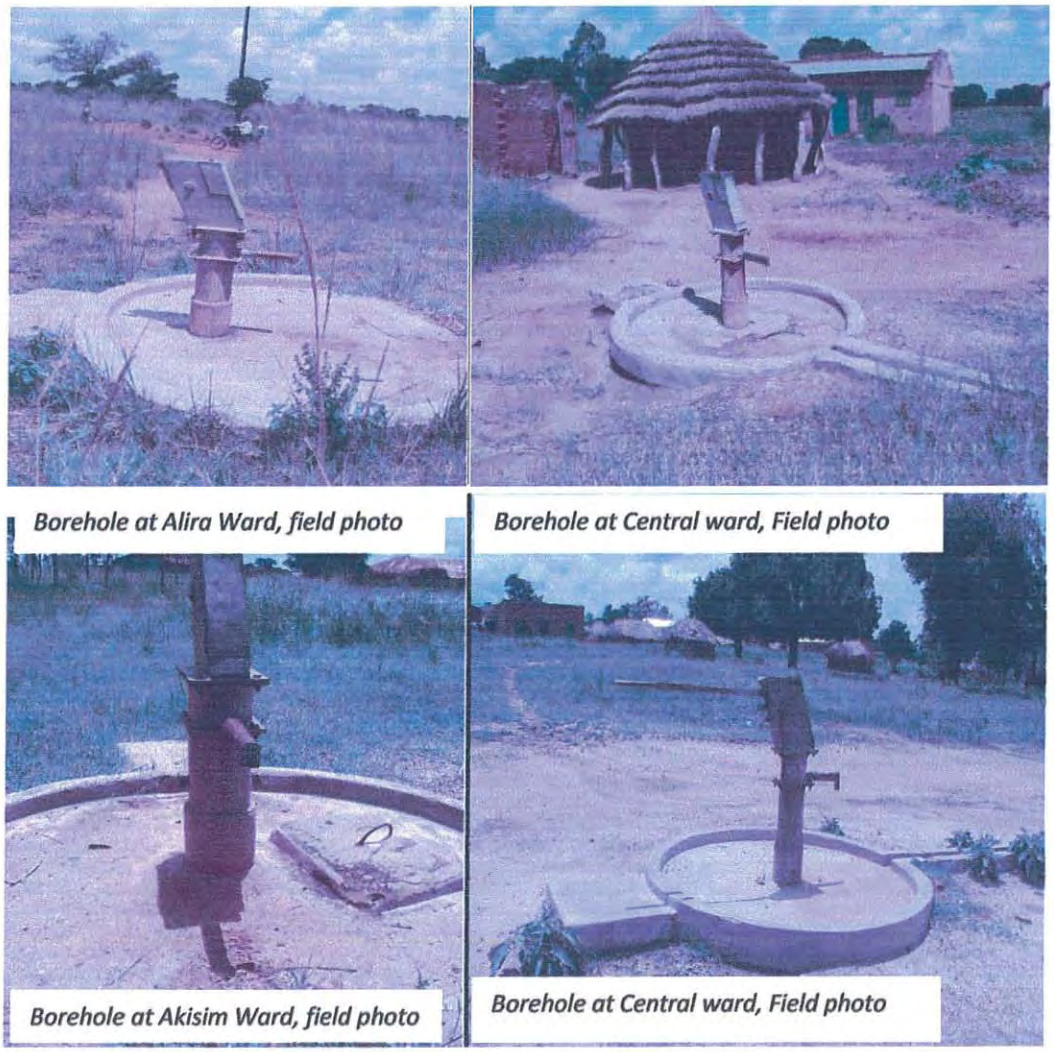
This implies that, local governments can only afford to deliver services when resources have been channelled to them from the central government and other development partners, since their revenue base is low. This affects the service effective and efficient service delivery at the local level.

5.3.2 The District Water Office (DWO)

The district water office was not involved in coordinating piped water project; DWO mainly deals with water points like boreholes, spring wells and dams within the district particularly for rural areas. The DWO oversees the provision of boreholes, their operation and maintenance in the community. For the case of ATC, 6 out of 12 community boreholes were broken down and no repairs made. Interview with the water engineer at the DWO he said that, 'the major challenge came as a result of community's reluctance in making their contribution towards operation and maintenance (O&M) as required by the water policy.' He further commented that, the water office does not have enough funds to buy new spare parts needed to repair those boreholes that have been broken down.

The LC 1 Chairperson at central ward told me that, the water user committee (WUC) members sometimes are the ones who are very corrupt in managing the money that the community contributed for O&M, for example a treasurer in one of WSC for Central cell borehole mismanaged the money worth 200,000UGX January-April 2011. When such a person was required to refund the money, he decided to flee to unknown destination.

Figure 5.3: Examples of Non-Functional boreholes not repaired in ATC



Source: Field photos 18/08/2011.

Note: *Top to the left all three boreholes' hand pumps are broken without any repairs done while that at the bottom right has mechanical problem in the pipes system.*

Figure 5.3 illustration shows ineffective service delivery from the DWO. 6 out of 12 boreholes representing 50% are non-functional, yet the community members with no access to piped water depend on these boreholes for domestic water needs. The most affected area is central ward which had all three boreholes not functioning by the time of this research.

5.3.3 The District Land Board (DLB)

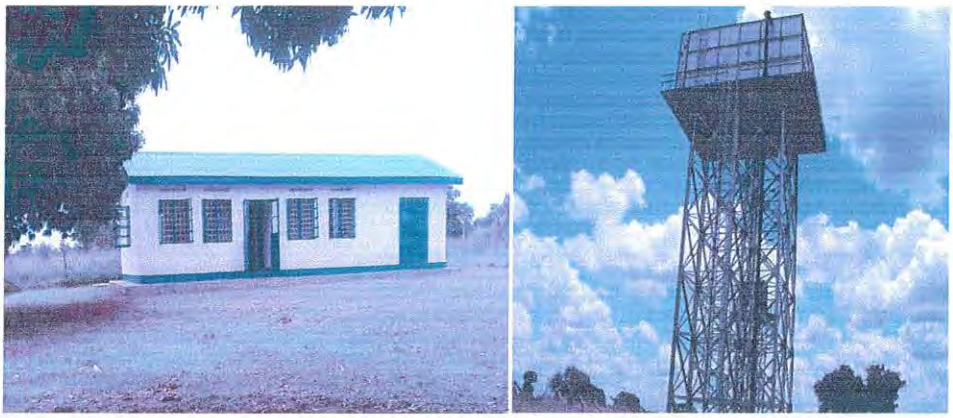
District Land Board in collaboration with the planning unity play a key role in ensuring efficient and effective urban land use. Land board coordinates activities related to allocation of plots to individuals or institutions through issuing relevant documents like land titles for surveyed land in the urban centres. The NWSC requires individuals or institutions to produce documents of proof of land ownership before new water connections are made. It is not surprising that, during my interview with the local community in ATC some residents acknowledged lack of plot or land ownership documents which made them not to be connected to piped water. However, acquiring a land title is not that cheap and easy as one respondent stated.

> *First for you to get land title, you have to apply by filling forms, pay the required amount and if that land is not surveyed then you need more money and time to do it.....It goes through different offices for you to get land title and in most cases one will spend years without any achievement...they tell you come later the person responsible has not signed or still in the process (34year old male customer, Central Ward 15/08/2011).*

5.3.4 The private sector

The private sector, in this case Ambitious Construction Company (ACCL) won the contract bid from MWE, the company was assigned to make water connections from Soroti to Amuria a distance of about 30Km. Construction process started in September 2008 and finalised July 2010. The company was supposed to provide 250 connections, 10 public stand pipes, 150 cubic metres of elevated steel tank, and construction of 1 urban water office. However, during the time of my research, only 4 public stand pipes have been constructed and available data from NWSC Amuria sub-office shows 229 connections made. The urban water office is functioning with a two stand pit-latrine. It was not possible to verify from the constructor as to why all the recommended work in the agreement was not done accordingly, but I was able to obtain some information from NWSC head office in Soroti that, many challenges including lack of payments of initial connection fees (50,000UGX) by the community, land tenure issues and low development of road network in ATC made it hard to achieve the planned work.

Figure 5.4: Office block constructed by ACCL and 150 cubic meter elevated steel tank at ATC



Source: Field photo 08/08/2011.

Note: *This Figure 5.4 illustrates some of the achievements made by private sector (ACCL). The left photo shows office block for NWSC Amuria sub-office.*

In spite of the ACCL achievements, the community has the outcry for low quality of the stand pipes materials provided both for yard and public water points. The stand pipes lack headlocks for safety and this provides easy access by those who are involved in water theft. An interview with one household head, he told me that his tap had been broken by unknown people at night for over three times since he was connected to the tap water.

5.3.5 The NGOs

The NGO who contributed to the financial assistance towards piped water connection to Amuria district was WaterAid, an international charity organisation operating in Uganda in ensuring better access to water and sanitation services among the communities. WaterAid contributed worth 400,000,000UGX (MWE: 2008 and The New Vision newspaper Kampala-Uganda, 2nd July 2008).

5.3.6 The Informal sector

Informal sector is one of the important sectors in the water provision; however, they are not recognised by the water sector policies or even being given an opportunity to participate in water development issues. *"Private operators manage water services in the majority of small*

towns with piped water and vendors often bring water from the point of collection to the user," (WAU: 2006). For example, water vendors supply water to mediate the deficiencies created by public sectors' inefficiency in service delivery. Also this has given them to set their own prices of water sold to the community. This study found out that, water vendors charge as high as three times the price charged per 20 litre Jerrycan for piped water (Vendors charge 500-600 UGX per 20 litre jerrycan and NWSC 100-150 UGX). Lack of formal arrangement by the government to recognise and regulate informal sector has created a challenge where most of the poor households are being overexploited by water vendors.

Figure 5.5: Water vendors at a borehole water source at Alira ward, ATC.

Source: field photos 19/08/2011.

Note: *In the right you can see vendors dominating while others wait for them to finish fetching. In the foreground are two bicycle wheeled carts already loaded and ready for distribution to the customers.*

The vendors at most carry twelve (12) 20 litres jerrycans per trip, it can be observed from the Figure 5.5 in the left-hand side, 10 jerrycans are fitted inside the cart and 2 others fitted in front of the cart. The vendors are charged 15, 000UGX per month by the WUC for their operation and this makes them to have more influence over other borehole users' in terms of access to water. Even if they came late to the borehole, they stop those who were already at the borehole until they are done. Through this influence, other community members find it difficult to queue for water at the boreholes and end up going to open wells that are not

controlled, hence exposing them to health risks from unsafe water. For example, a statement made by one woman who is not connected to piped water:

> *We don't have any tap water or even public tap connection in this ward (Okutoi); we rely on boreholes where you have to fight for water at peak hours especially in the morning and evening. The worst part is the vendors who come with many jerry cans and stop other users to fetch water till they fill up their jerry cans..., they (vendors) cause a lot of delays and even water struggling* (43years old female, Okutoi ward 17/08/11).

5.4.0 Community participation

The community is one of the target groups for development programmes, their participation either as civil society organisation or Community Based Organisations plays a key role in sustaining a given project. It is worth noting that, the piped water project designed by 'top down' approach had no involvement of the community. This can be reflected by the statement made by the former Local Council V district Chairperson, Julius Ochen in the national News paper: '*The Government's policy of awarding contracts from the centre always leads to poor service delivery.*' (The New Vision newspaper Kampala- Uganda, 2nd July 2008).

However, the study found that, the water project was designed and implemented through the government (MWE) and ACC without any community involvement. Even at the time of constructing water lines within the urban area, many residents were willing to contribute labour in exchange with some payment, but the company had its outside labourers, hence the residence became observers without any contribution towards the success of the project. One resident said.

> *When I heard about this water project being proposed for Amuria (in 2008), I was excited that some temporal job had come. Being a youth I was ready to participate in digging water lines. This only ended as a dream not a reality when I was denied to join the company's workers who said their number was enough to accomplish the job, no need for new recruits* (19years old Male, Alira ward 16/08/2011).

Amuria town council has different community based organisations dealing with both social and development issues. For example, Amuria District Development Agency (ADDA) works with various NGOs in coordinating development projects supported by Northern Uganda

Rehabilitation Programme (NUREP). An interview with ADDA field staff about the objectives and roles of the CBO, he told me that their focus is in the improvement of community livelihoods especially for the rural community through livestock restocking and distribution of farm seeds to farmers groups, and they had no objective dealing with water supply improvement. However, the main challenge as to why CBOs have no interest in water provision stem from government control over power and taking decisions independently without considering the importance of involving the community to participate in development projects like water provision. Also the cost involved in water provision like piped and boreholes demand a lot of money which the CBOs cannot afford to facilitate without donor assistance, thus making them not to have focus on providing water services.

Government institutional arrangements in dealing with urban water supply in ATC has been faced by lack of effective and efficient service delivery due to high bureaucracy involved, limited accountability and coordination among different sectors at national and local levels. This can be supported by the argument of the World Bank.

> *'Efficiency and effectiveness of infrastructure provision derives not from general conditions of economic growth and development but from the institutional environment.'* (World Bank, 1994 cited in Batley: 1996).

5.5.0 Assessment of piped water system performance

The results of my assessment on piped water system performance covers three key issues; effectiveness, operational efficiency and cost effectiveness of the piped water supply system (see Table 5.3);

Effectiveness in this contexts looks at the percentage of households with domestic piped water connections and the existence or not of water rationing in all the four wards in ATC.

Operational efficiency covered the number of households with functional and non functional (disconnected) connections. It also included the assessment of public stand pipes and their functionality.

Cost effectiveness included issues on water bills, unit charges if they reflect level of consumption and finally whether the charges cover cost of production.

Table 5.3: Assessment of urban piped water system performance

	Effectiveness		**Operational efficiency**				**Cost effectiveness**		
Ward	% of H/H covered with PW	Water rationing	% of FCs	% of DCs	Public Stands & functionality		Charges reflect consumption	Unit charges	Charges cover cost of prod'n
Central	21	Yes	82	18	2	No	Yes-meter	High	No
Akisim	15	Yes	76	24	2	1-yes	Yes-meter	High	No
Alira	10	Yes	75	25	0	No	Yes-meter	High	No
Okutoi	0	None	0	0	0	No	None	None	None

Source: Field data August-September (2011)

%= Percentage H/H= Households PW= Piped water FCs= Functional Connections

DCs= Disconnected Connections

In general, out of 1,575 households in ATC only 229 households (representing 15 percent) have domestic piped water connections and 1, 346 households (representing 85 percent) do not have piped water connections. However, on the sad note 47 households (3percent) have been disconnected from the piped water and this has reduced the number of those with functional connections to only 12 percent down from 15 percent for the rest of ATC. Therefore 88 percent of the households have to find their alternative sources of water. Four (4) public stand pipes were constructed and only one is functional on occasional basis due to many factors including lack of committee to manage and regulate the operation, and poor maintenance among others. One of the Wards (Okutoi) with a total of 216 households do not have any connections to piped water, this explains lack of equity and effectiveness in service delivery. The consequence is as Guy and Paul put it:

> *Until much higher rates of direct connections are achieved, it is likely that springs and boreholes will continue to be used and in many cases will put the health of the users at significant risk* (Guy and Paul: 1999).

The situation of water supply in ATC is being characterised by the principle of those who have the money and ownership of property are served first. According to UNWDR (2005) "*Piped water is mainly provided in the wealthier and well planned core areas of towns,*

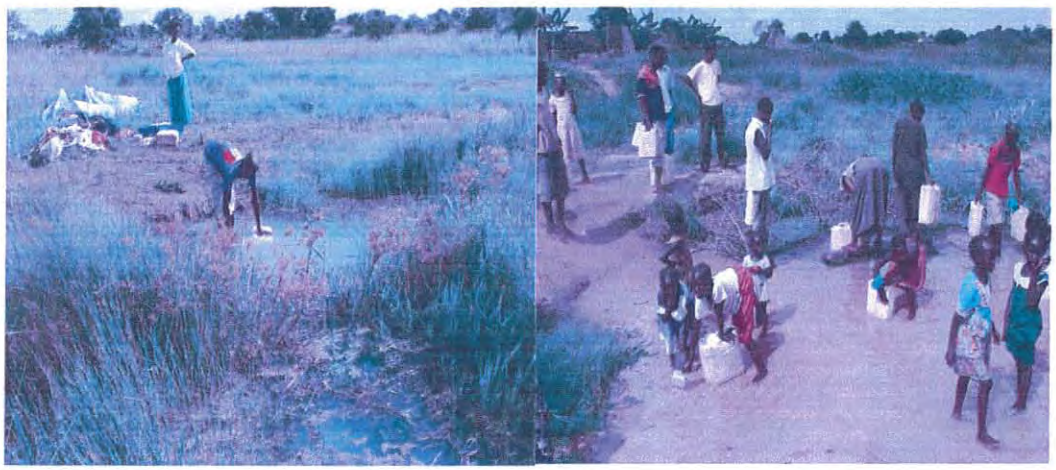
unlike the urban fringe areas, which usually comprise of informal settlements occupied by poorer people, many in make shift accommodation." The alternative water sources for poor people would be boreholes, wells and swamps.

Figure 5.6: Some of the households' yard piped water disconnected in ATC

Source: Field photos 12/08/2011.

Note: *Water meters have been removed from each yard taps as seen in the foreground of both photos.*

Figure 5.7: Community members fetching water from unprotected sources in ATC



Source: field photos 08/09/2011.

Note: From Figure 5.7, left is '*Okucoi*' (Alira ward) and right '*Acabo*' (Central ward) open wells respectively. *Both children and elders standing in the water while fetching as can be observed from left to right photos.*

The question here remains that, what would be the health risk of using this water for domestic purposes and why are many people resorting to the use of this alternative source? To answer this question I will try to illustrate the situation in Chapters Six and Seven where I will be discussing factors influencing access to water supply, socio-economic impacts and challenges respectively.

5.6.0 Perceptions of the actors about governance in respect to NWSC services

The NWSC employees in ATC office had mixed perceptions on the way the project functions based on their experience and contact with both the customers and top administrators, the project is perceived to be successful in providing the service to the public. However, the major challenge is lack of autonomy, transparency and accountability procedures; this is due to 'top down' management of the project whereby the constructor was accountable to MWE not even to NWSC or the district level. The project was handed over to MWE in July 2010, since then NWSC has not been given power to run the project formally by MWE as mandated in the criteria for urban water system management. Therefore, the general view would be even if the urban water office is there (in ATC) physically, the policies and all the procedures to be followed come from above, thus increasing bureaucracy and poor service delivery.

On the other side of the customers, for those who were connected and later disconnected due to some reasons like non payment of the water bills perceived that; the project is ineffective and very expectant on profits than quality service delivery. In a statement made by one of the customer whose yard tap was disconnected, after 4 months of using piped water had this to say.

> *I have been paying my bills for the past 4 months, but this time (5th month) I had some family problems especially my illness that took all the money. I explained to the NWSC staff about the situation but they were not considerate, they disconnected the water (*53year old female customer Central Ward 12/08/2011).

The other category is the customers who have not been connected for various reasons like inability to raise connection fees, lack of land/plot ownership and being far away from the town centre (locational aspect) perceived the functionality of the project as being politically oriented. They question why the project requires long procedures of applying, provision of different documents for proof of ownership of the property among others. These conditions have left out a majority of the urban poor who do not have in most cases land ownership and are unable to raise connection fee or even pay monthly bills. NWCS has put public stand pipes to help the low-income people access water but, the services is questionable by the public as stated by LC 1 Chairperson in his statement.

> *Look public stand pipes that were put there in the name of poor people....how are they functioning?....all community members gather there for water and how would you select those who are poor and not poor? Even the stand pipes water is not free, we are to pay (Local Council 1 chairperson, Akisim ward 08/09/2011).*

This raises the question of inequity in the access to piped water services among the community in ATC. Also ineffectiveness of urban governance in managing the project has been revealed from the above statement.

Figure 5.8: The only functional public stand pipe Akisim Ward ATC

Source: field photo, 18/08/2011.

Note: *Figure 5.8, in the left is a woman taking care of the tap, sells water to the public and being paid (4,500-5,000UGX) per month by the private operator.*

This only public tap is also not in the good condition, as observed from broken 'tap heads' on one side where a boy is sited. Two outlets are functioning, and if no repairs and maintenance are put in place, soon it will be non-functional like the rest. However, I was unable to get the details of the private individual responsible for standpipe in Figure 5.8, and how that person got the contract of managing public stand pipe. During my interviews with NWSC staff members at ATC sub office, they declined to provide any information related to public stand pipes contracting and management. The only response given to me was, '*no contract has been made by NWSC with any individual to manage public stand pipes.*' However, the care taker (person given to sell water) simply told me that she does not know the arrangement of the tap water management but her role was only to sell water to the customers.

The main challenges for the public stand pipes is lack of management and no committee responsible for their maintenance, thus many are non-functional as seen in Figure 5.9.

Figure 5.9: Examples of non-functional public stand pipes in Central Ward ATC.

Source: Field photos 08/09/2011.

Note: *Just in a period of less than one year since installation, all the public taps are in poor state with broken tap heads. In the right, some women returning from 'Acabo' open well are visible in the background.*

The main focus should be on the issues of effective governance as MWE put it;

> *Good governance is key to ensuring that services reach the intended population particularly the poor who have less access to services and less influence to demand them. Resources are never shared equally among the people but good governance can help ensure a more equitable distribution* (MWE: 2008).

The challenge of providing household domestic water needs is much felt by households with large number of people. The poor households interviewed had average household size of 5-7 people in their households, yet a majority of those poor households are unable to pay for water connections and also buy water from vendors. Their water needs are being compromised due to lack of access to piped water since other alternatives are not also reliable for them, as church reverend stated.

> *Being a church leader, I do receive many visitors on regular basis....much water is needed to cater for their water needs. However, piped water supply is not efficient and adequate and this calls use of other water sources which are not possible also to access like boreholes and vendors who sell water expensively and sometimes have their special customers in hotels and 'Ajon' bars (local beer brewers and sellers), so you can't convince such vendors to sell water to you even if you have the money* (55years old male Reverend, Pentecostal Assemblies of God (PAG) church leader. Akisim ward 22/09/11).

5.7 Summary

Finally, the role of government is very important in the provision of basic services like water to the community. The types of policies designed, how such policies are implemented and monitored determines the level of government effectiveness in service delivery. In this chapter I have discussed the roles of different actors involved in water supply system in ATC, the analysis of the piped water project performance and effectiveness in delivering the services to the targeted community has revealed that, all the stakeholders involved in the water sector have contributed to some achievements. However, the main challenges facing governance effectiveness in service delivery as perceived by actors includes bureaucracy, lack of public involvement in water development, lack of equity in service provision, lack of quality assurance on project implementation especially due to inadequate monitoring, inadequate transparency and lack of public accountability. Ministry of water and environment with its partners in the government departments for example, NWSC and NGOs should have a focus on how sustainable the projects like this one could be attained. Top down planning is one factor that could be changed to 'bottom-up planning' so as to increase public

participation and having their input into the project planning, design and implementation. By doing so, it could help the community to build-up trust and ownership of the project facilities like public stand pipes that have been greatly affected as a result of poor management and lack of public responsibility.

CHAPTER SIX: FACTORS INFLUENCING ACCESS TO PIPED WATER AND SOCIO-ECONOMIC IMPACTS

6.1 Introduction

This chapter, I discuss the socio-economic impacts of accessing and using piped water on the community's living conditions, first I discuss briefly some characteristics and factors that influence community access to urban piped water in Amuria town council.

> *"This town (ATC) is 'developing' with 'Darkness (No electricity) and Dusty/Muddy road Conditions' (No tarmac roads), banking services got from 'outside', the 'well off' on top in access to services like health and water because they can afford and the poor are poorly served....but access contaminated water from wells (e.g. Acabo well) or else they have to travel long distance for borehole water. Those who have resources and opportunity continue to prosper, who knows what comes tomorrow? May be these conditions will change" ('Boda boda' motorcyclist aged 24, 02/08/2011).*

This narration came as a result of my informal conversation with one of the '*Boda boda*' cyclist[9] on the first day when I had visited the study area to assess and test my research questions (interview guide). He told me the general conditions existing in the community related to the development and access to resources according to his understanding. The actors' role discussed in the previous chapter five in the water supply explained how and why the community can have access to piped water and other alternative sources available to them. In order to achieve positive results from access and use of urban water services, there are many factors that determine/influence households' access or exclusion in piped water supply system as WaterAid Uganda an NGO stated;

> *The ability to pay rather than equity is the key factor in determining access to urban water services* (WAU: 2006).

This opens up my discussion on the factors that influence access to water services in the urban area. I start by clarifying categorisation of 'urban poor' from the point of NWSC strata and from the FGDs participants view point.

[9] Boda boda cyclist locally refers to persons who are doing business of transporting people and goods using a motor cycle from one point to another at a negotiable amount.

NWSC categorizes the following strata of customers as "urban poor":

- Household incomes of less than Shs.80, 000 (US Dollars 40) per month and in most cases earned on a day-to-day basis i.e. equivalent household income of US Dollars 1.33 per day.
- Clustered settlements with a high crowding index of 0.25 - 14 people
- Very low levels of water consumption of between 0-20 litres per capita per day
- Customers who do not have own connections (UWSD: 2008).

Contrary to this categorisation by NWSC, there are several factors that the participants raised during field interviews and focus group discussion related to "urban poor" and piped water access, three social classes of urban dwellers have been identified and their characteristics as in the Box 6.1.

Box 6.1: Categorisation of Income classes and their characteristics

1: The poor (Low income class)

- Have no employment opportunity in the urban area
- Earn a living through petty activities like hiring casual labour and begging
- No savings of both cash and other assets for example livestock
- Unable to meet basic needs of the household such as food, shelter and health
- A majority are uneducated formally
- Live in marginalised environment with no infrastructural development and highly vulnerable to disasters like diseases
- Some own little or no land in the urban area
- Have no salary scale on what they earn from petty activities; they earn income seasonally (no permanent source of income).
- Highly affected by economic changes as a result of inflation like changes in prices of commodities

2: Middle income class

- Some are temporarily employed in formal and informal sectors.
- They are able to save either in cash or liquid form.
- Live in relatively good environment, are able to rent improved houses.
- 'Class between poverty and wealth', meaning that they can become the poor if their

temporal jobs end but can become rich if they upgrade their job status.

- Some are able to meet all the household basic needs depending on the salary scale and challenges they face economically.
- Have low level of education and unable to meet requirements for highly paid jobs.
- Majority are self employed in the informal sector (local beer brewing, restaurants services, tailoring, retail shops, and saloons among others).
- Earn monthly income estimated between 100,000UGX – 200,000UGX*.

3: High income class (The rich)

- Employed in highly paid jobs and earn income estimated at 500,000UGX* and above
- Own permanent assets like land and houses including other luxuries such as cars
- Live in areas with good infrastructural services like water services, roads and sanitation facilities
- Not highly affected by economic changes
- Are able to create employment opportunities for other community members for example housemaid, watchmen and also some establish projects that support job creation.
- 'Decision making class,' meaning that their views are always considered by planners of any development in the urban area since they have more influence than the poor.
- Class of highly educated (completed tertiary and other trainings).

Source: Field data (2011)

*Estimates were based on those people employed in formal sector for instance government civil servants without considering self employed people whose income level does not have scale.

Given all the income classes shown in Box 6.1, it is also important to note that no permanent class of income is achieved by different people. The poor or low-income people can become rich in the long run depending on their abilities and general government development initiatives focusing on poverty alleviation, while some of the rich class people can also become poor especially if they lose jobs due to some factors like personal health and government policies of institutional restructuring reforms in different sectors. Some people who are employed in government jobs become unemployed due to institutional reforms, thus no class of income is permanent. However, understanding the characteristics from each class can help to find out those key factors that influence access to urban services.

The level of water consumption per household in Amuria town council was found to be varied based on the household size composition. The bigger the number of people in the household, the more water was consumed in litres. The average estimates in Table 6.1 include only daily uses of water in the household like for; cooking, drinking and cleaning with exception of washing clothes. Washing of clothes was considered as non-daily activity within the household during the interviews thus its exclusion.

Table 6.1: Daily Average estimates of water consumption based on household size

Household size (Persons)	**Frequency**	**Average estimate (litres) per day**
1 (include the widowed)	4	16.7
2	6	20
3	3	26.7
4	7	37.5
5	9	45
6	8	53.3
7	5	60
8	4	70.3
9	-	-*
10	3	80
11	2	90
12	1	90
13	2	98.4
14	-	-*
15	1	120

Source: Field interviews (2011)

-* Household size not mentioned from the interviews, has no data estimate.

The household size of 15 persons was the last mentioned during my interviews; however, some extended families could have the size far beyond that. Though the level of water

consumption tends to increase with the number of people in the household, it is important to note that, some household characteristics must be considered including; the economic activities, age and water management practices which could determine how much water is needed in the household. For example, households engaged in business activities like local beer brewing and restaurant business (160-200 litres per day); much water is needed to carry on with the business even if their household size is small. Also households with many children tend to spend much water because of poor management by children than those households with elderly people who are more responsible in water use and management. Therefore, it is not explicitly the household size which determines how much water is consumed, other factors must be considered such as household level of income among others which determines water needs and access.

6.2 General factors that influence access to water services in ATC;

6.2.1 Unemployment

The 'ability to pay' for water requires the household to have income source that does not fluctuate. Here what I mean is that, if the household head or any member who is a 'bread winner' is not employed in any secure job, it becomes very hard to pay for water connections and monthly bills. The study found that, at the beginning of the piped water project, connections were made to include some poor households who later failed to pay for water monthly bills and ended up being disconnected. Interview with one of NWSC customer had this to say:

> *I worked as a soldier in 1990s; I was mentally affected from the kind of task that I was assigned..... I was then brought back home to get treatment without any government assistance and now I do not have any job, yet the cost of living is very high including access to water which is both energy and money demanding, see my yard tap has been disconnected 5 months ago, I only used tap water for two months since I was connected (* 50 years old Male resident, Alira ward 17/08/11).

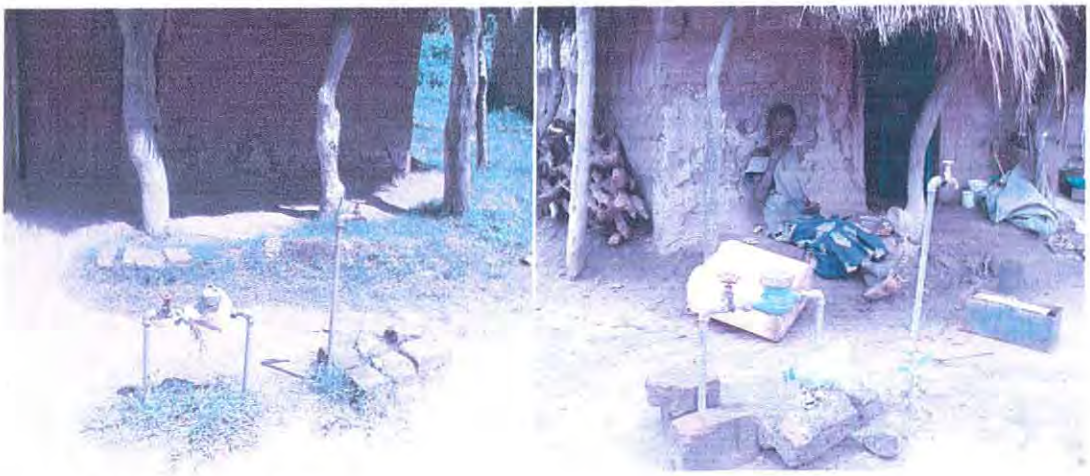
This is just one statement among the many customers that I interviewed from those households who are not connected and those being disconnected to emphasise the importance of employment and having reliable source of income for the household. From my field observation and interviews, most poor households who were able to make connections during the initial stage when the connection fee was low (50,000UGX) have never even tried to use

tap water mainly as a result of fear to pay monthly water bills. These categories of households are optimistic of getting employment in future and then start using their tap water. As can be seen from a middle income women statement:

> *I graduated two years ago from Kumi University in the field of Business Administration but not yet employed, I have my small business (not specified) which is able to maintain me and the family. My husband is not also employed but we have a plot of land and water connection made though we have not developed it (plot), we are renting a house and our own tap water we are not using it now....it is our future investment (*25 years old female, Central ward 19/08/11).

Ability to work and earn money provides opportunity for individual households to afford piped water connections as well as paying water bills as can be seen in this narrations.

Figure 6.1: Water connections to the low-income households in ATC, Central ward



Source: Field photos (2011).

Note: *In the background are the houses of low income households built with temporary materials like poles, mud blocks and grass thatched roofs and in the foreground yard piped water taps are observed.*

Low income households who have piped water connections employ different mechanisms of paying for their water bills, as observed by (White *et al* : 1967-1997; Ina *et al:* 2001) *"Households with piped water connections have different ways to pay for their water. In 1967 all piped households in the sample were paying a proportional rate based on consumption levels. In 1997 this was still a common mechanisms of collection of fees in Kenya and urban households in Uganda".*

For example, the study found that some households rent out their tap water to business persons who are able to sell water to community members without connections, and from the money they receive helps to clear water bills while the little that remains they can use for catering other household needs. Here it is also important to consider UN-HABITAT's statement;

> *Better water and sanitation could improve the lives of hundreds of millions of urban dwellers who are currently unserved or inadequately served by formal utilities and lack the financial and organizational resources to develop adequate, safe alternatives. Most of these urban dwellers also suffer from other poverty-related deprivations* (UN-HABITA: 2005).

Employment really matters in providing income to the households and ensuring their ability to access basic services as the '*Boda boda*' cyclist stated *".... the 'well off' on top in access to services like health and water because they can afford and the poor are poorly served....but access contaminated water from wells (e.g. Acabo[10] well) or else they have to travel long distance for borehole water."*

6.2.2 NWSC Customer Service Charter

The NWSC charter conditions which are outlined in Chapter Five have negative impacts to some households who are unable to meet all those requirements. For example, land ownership proof documents are needed so that water connections can be made to individual households. Reflecting on the characteristics of poor households, most of them do not own land in the urban area, and also if any do, they are unable to develop such asset to suit the conditions for water connection. For those who have all the required documents and are able to meet all the requirements laid down by NWSC, have no problem of being connected as long as they have financial resources.

The other most influencing factor here is the high charges of new connections and water bills, for example during the initial installation of the piped water project, only 50,000UGX was charged regardless of any distance by the private company, but after handing over to NWSC only a distance of 50metres is free but any extra distance is charged at 2,300UGX per

[10] Acabo is the local name given to the open well literally meaning that walking (*Cabul cabul*) into the water due to the wells shallowness. Truly everyone enters the well, stands in water and fetches as seen from the cover page photo.

metre[11]. Imagine now the situation for those poor households who are always pushed at the peripheral locations beyond 200metres from main water lines, (then 200m x 2,300UGX= 460,000UGX). The cost of connections can only be met by high income class while the low income class end up being excluded due to this high connection charges. A good example is given by Okutoi ward which has no connections made, yet it is part of Amuria town council. The reason is that, this ward is mainly occupied by the low-income households and located far away from the main water line including poor development of road network.

6.2.3 Land tenure issues

Land tenure is one of the contributing factor for access to water, as earlier introduced in Chapter Two, even if one has enough money to pay for piped water connections but has no land/plot ownership right in the urban area, no miracle can happen to that household 'in vacuum'. What I mean is that, NWSC water installations take place on land which has proof of ownership and without that, the installation can be considered illegal. To emphasis this point (MWE: 2007a) argues, "*Land tenure issues are critical to the development of water infrastructure. Any location of a water supply project must respect the proprietary rights of the landowner or occupier as protected by the Constitution (1995) and the Land Act (1998).*" However, another challenge surrounding urban land is the right of ownership as UN-Habitat argues, *"For most informal settlements, there are the uncertainties regarding who owns the land and a lack of an official map showing plot boundaries,"* (UN-HABITA: 2005).

The study found that, most households who are government civil servants such as; teachers, police, nurses and doctors mostly live in rented houses because they do not own land in ATC. The reason is mainly due to transfer of such government workers to different destinations within the country depending on job descriptions. For this matter, households who have money yet they do not have choice of land ownership like civil servants mentioned here face a challenge of getting access to piped water. Even if, some landlords owning rental houses have piped water connection, it was found that access to water was limited to only few tenants and in most cases, some landlords decided to lock their taps permanently without allowing tenants to have access to. The only alternative available to such tenants was to buy water from public taps and Vendors. Here is a statement given by a tenant:

[11] 2,300 UGX reflect the new charges by 2011 and not a fixed charge, always renewed by NWSC depending on economic conditions and cost of producing and supplying water.

We have lived in this house for two years, I am a tailor and my husband is working as assistant records officer at the district.... The land lord paid for water connection and we only used water for two months, since then the owner stopped all tenants not to use the tap water. He told us that we (tenants) are not able to mange water and causing high water bills, yet we used to pay him the money for water on top of rent and now everybody here has to buy water from outside (27 years old Female tenant, Akisim ward 02/09/2011).

Figure 6.2: Examples of yard taps restricted by landlords in ATC

Source: Field photos 02/09/2011.

Note: *From left to right, Akisim and Centra ward respectively. In the background rental houses and tenants are observed. While in the foreground water taps that are not in use are observed.*

Land is an important asset for any household in the urban area, without it life is not easy since most of development activities take place on land, ranging from housing facilities, road network services as well as water network. The challenge is on how to have access and ownership to urban land as earlier stated in this sub section. Therefore, it is clear that those households who have no access to land and tenants are highly impacted negatively in accessing piped water services within the urban area of ATC.

6.2.4 Government development programmes and policies in addressing poverty

According to Amuria district development plan 2010-2012, it clearly shows that the level of poverty in the district is still high; *"there is a high incidence of poverty in Amuria district with over 63% of the population living below the poverty line, a situation attributed to insecurity, changing weather patterns and lack of access to markets. Poverty is predominant among the rural farmer population which forms a big proportion of the district population (over 90%) who depend on cultivation and livestock keeping as the major source of livelihood,* (Ssemakula, *et.al*: 2010). Here a few factors that are contributing to poverty incidence have been stated, it is important to focus on government programmes and policies related to development as one of the key factors behind poverty reduction.

The National Government programmes geared towards poverty reduction include Poverty Eradication Action Plan (PEAP), Plan for modernisation of Agriculture (PMA) together with National Agriculture Advisory Services (NAADS) among others have been implemented throughout the country including Amuria district with little impact. The main challenge is inadequate resources from the government sectors meant to deliver those programmes to the beneficiaries. When the poor in rural areas fail to overcome poverty, they end up migrating into the urban area with the hope of escaping from rural poverty, and thus increasing pressure on few basic services like health and water available in town centre.

Amuria district particularly the urban centre does not have other important services for development. For instance, since 2005 the district has been operating without electricity and banking services. The only available Automated Teller Machine (ATM) was installed by Stanbic Bank in 2008 just to provide civil servants and other bank customers to withdraw money and checking balances. The main challenge failing banks from investing in ATC is lack of electricity services, since it is expensive to run the bank on generators. However, during my interviews with the Town clerk, he was optimistic that government had already started power installation project by mid 2011 and expected to be complete by early 2012. From the field observation, I was able to confirm the Town Clerks' view on power installation; I observed electric poles without electric wires being established in different streets in ATC by August-September 2011. I then realised what the '*Boda boda*' cyclist said, *"This town is 'developing' with 'Darkness (No electricity) and Dusty/Muddy Conditions' (No tarmac roads), and banking services got from 'outside'.... May be these conditions will change,"* as something realistic for ATC situation.

The point here is that, when people are poor they cannot afford any basic services and also if such services are not provided then they have no option to live with. Poverty reduces options available for poor households to access services like piped water in urban areas.

The decisions taken by government departments like the district water office also have impact on the poverty level and households coping strategies. For example DWO in Amuria district since 2009 has stopped allocating more borehole water point's establishment to ATC with a belief of encouraging households to use piped water. This is a challenge to low income households who are unable to access piped water services, yet they depend on borehole water for domestic purposes. Also luck of repairs on 50% non-functional boreholes has left a big challenge to the community. In connection to this, the church leader had this to say.

> *Now the authorities here in ATC are not allowing more boreholes to be drilled so that tap water coverage can increase, yet tap water does not flow regularly. What next should the community do?.... Let those leaders help us, see now my children ride bicycle to very far (2-3km) boreholes where many people crowd and they return very late (after 3 to 4hours) imagine this situation?* (42 years old male Pastor, Central ward 20/09/11).

6.2.5 Population size

The size of the population in an area determines MWE and NWSC priorities in establishing piped water system. For the case of Amuria town, it is considered as small growth town with urban population of 5,136 people. This goes further to lower levels, that is to say wards; the more the households are concentrated, the easier for NWSC to consider them than those who are scattered and few. The reason behind population size is related to cost benefits of establishing and managing water by NWSC. However, this should not be considered in isolation with other factors like type of income class constituting a given population in the urban area; because as field work results revealed that, central ward takes the lead in piped water connections (21 percent) simply because it has a big number of households and being occupied by the majority of working class, centre for business activities and government institutions such as schools and health centre to mention but a few. According to UNWDR (2005) "*Piped water is mainly provided in the wealthier and well planned core areas of towns, unlike the urban fringe areas, which usually comprise of informal settlements occupied by poorer people, many in make shift accommodation.*" According to the area manager NWSC, "*We sometimes make priorities to ration water based on population and*

other factors.....it's not that other customers are not important to us, but because of inadequate resources we have," (Area Mnanger NWSC Soroti head office 21/09/2011).

6.2.6 Political environment

National water and sewerage cooperation being a government parastatal, it is not excluded from political issues. When the project was initiated early 2009, local communities were not involved to participate at any stage of the project development. Therefore, political activist on the opposition side communicated wrong information to the local residents that, piped water project was meant to serve everybody without any payments. Some households believed in such messages and remained waiting for free connections to their homesteads, but this could not work when they were required to pay connection fees by the ACCL. The challenges have continued to be faced by NWSC staff members working in Amuria town council, In a statement made by one of the employee during his work in the community:

> *One day, I went out to distribute water bills, I met some customers who approached me with several questions.....why do you want to exploit us?.....the water has been paid by government we have been informed by some leaders, customers claimed (Plumber, quoting the customers reaction NWSC, ATC office 08/08/2011).*

To my understanding, such reactions are the outcomes of lack of public involvement in the project design, planning and implementation. If the community had fully participated in the project activities, such political issues would not have been a challenge to the water project. As noted by UN-Habitat; *"The groups most affected by the adverse consequences of expanding urban water systems are usually those lacking economic and/ nor political influence..."* (UN-HABITA: 2005).

6.2.7 Economic crisis

The changes in the world economic climate are felt at national and local levels of any developing nation like Uganda. The cost of living is high for not only the poor households but also the rich households when commodity prices change and inflation greatly impacting on those depending on 'cash economy'. From the two FGDs that I conducted with 20 participants at Central and Akisim wards respectively, Table 6.2 shows some of the commodities and their price changes December 2010-August 2011.

Table 6.2: Changes in the costs of essential commodities in Amuria Town Council 2010/2011

Commodity	Quantity	2010 price by December (UGX)	2011price by August (UGX)	Percentage change	Difference in UGX
Sugar	1kg	3,000	7,000	133.3	4,000
Salt	300g	350	500	42.9	150
Corn flour	1kg	1,500	2,200	46.7	700
Washing soap	1kg	3,000	4,500	50	1,500
Rice	1k	2,000	3,000	50	1,000
Cooking oil	1litre	5,000	7,600	52	2,600
Kerosene/ paraffin	1litre	2,500	3,500	40	1,000
Meat(beef)	1kg	5,800	7,000	20.7	1,200
Beans	1kg	1,500	2,000	33.3	500
Dry Cassava	1basin	6,000	12,000	100	6,000
Groundnuts (shelled)	1kg	3,000	4,000	33.3	1,000
Domestic water from vendors	20litres	250	500	100	250
Charcoal	1 bag	12,000	20,000	66.7	8,000

Source: FGDs August 2011.

From Table 6.2, the cost of sugar was more than double with an increase of 4,000UGX from 3,000UGX to 7,000UGX for just a period of eight months (December 2010- August 2011). Dry cassava is one of the traditional food crops for every household in Teso sub-region; it is used to prepare local bread referred to "*Atapa" (which is a product of millet or sorghum and dry cassava grinded together to form fine flour. Atapa is eaten with a variety of sausages including meat, beans and vegetables).* Locally if the household does not have a cassava garden, that household can be regarded as "the hungry household" because they do not have cassava considered as staple food for every family's food security. The demand for food increased yet the supply decline in Amuria district as a result of poor production in 2010 as

well as sell of food crops in exchange of money. Cash crop production has declined in Amuria district since 1990's due to fall in the market prices and climate changes, and now people are concentrating on other livelihood activities like operating small scale business enterprises, rearing livestock, burning charcoal, making bricks and relying on relatives for assistance (remittances if any).

Finally, it is not possible to single out one factor to be more influential in determining access to piped water, a range of issues as discussed from above must always be considered by all stakeholders involved in urban water supply. Importantly, urban governance must be sound enough to address such factors. WaterAid an NGO in Uganda emphasised that; *"the ability to pay rather than equity is the key factor in determining access to urban water services,"* this may be true to some small extend for Amuria town council, but to the greater extent land tenure rights, unemployment, government development policies, population size, access to/availability of other urban infrastructure and general economic conditions in the urban area contribute to exclusion or inclusion of households in piped water access.

It is also imperative to consider why some households have been disconnected from piped water system. From the two FGDs and interviews conducted in ATC, a few points were noted by the participants as to why most of the households (47 households) were disconnected.

6.2.8 Reasons for being disconnected from piped water

- Inability to pay monthly water bills;
- Poor management of water by some tenants leading to high bills;
- Road constructions usually cause damage to water lines and not frequently repaired;
- Lose of job or change in economic activity to less productive one reduces income and hence failure to pay water bills; and
- Having illegal connections not made by NWSC staff.

These reasons include those mentioned during the field interviews and FGDs August 2011, unlike CSC which states that 'the customer can be disconnected upon his/her request.' None of the participants mentioned this point for those who have been disconnected, but the outstanding five cases above are considered by the community in ATC as to what has contributed to 47 households (representing 3 percent) being disconnected.

6.3.0 Socio-economic impacts of piped water access and consumption

The general observation from the community on the achievements and shortcomings of the piped water provision was given during FGDs by the participants as follows:

- The access to piped water by those connected has helped cut the costs of buying water from the vendors who charge high prices.
- Time saving from travelling to far distance to fetch water from boreholes, and this has saved especially time that women need to do other household chores such as caring for children and preparing food among others.
- Improved hygiene and reduced risk of getting illnesses that could result from poor hygiene in the household due to lack of access to safe and adequate water.
- Employment opportunities especially those selling water and having projects that produce food crops like vegetables (cabbages, tomatoes and onions) being produced through watering. Establishment of fruit trees nursery beds like oranges has benefited some households who are connected and able to manage their water effectively.
- School attendance is not much affected for those who have yard tap connections. Children do not need to go to overcrowded water sources to fetch water if there is connection at home.
- Reduced community quarrels and fighting especially in access of water from boreholes at peak hours since the number of people going to the boreholes has declined.
- Increased economic productivity in the related businesses like local beer brewers greatly have benefited from piped water supply which the participants acknowledged during the focus group discussion as one way in which they are able to cut the cost of purchasing water from vendors and gain profit from their business.

However, some negative impacts have been observed from piped water provision by the community in Amuria town council as;

- Poorly planned settlements along the roadside reserves were demolished in order to construct the main water lines in the urban area, hence displacement of households and their economic livelihood activities as well.
- Debt burden to poor households who borrowed money from friends or relatives to have piped water connected to their homes at the initial stage of the project, but later failed to both pay water bills and debt.

- Illegal connections by some community members has resulted to some legal charges from NWSC administration and this also has resulted to tarnishing of individual reputation within the community
- Land excavations lead to land degradation as a result of soil erosion effect.
- It has also created some conflicts in the neighbourhood as a result of water theft inform of breaking taps at night and sometimes leaving water to be wasted due to tap damages.

6.3.1 Impact on women and children's education

The provision of household domestic water was found to be the domain of the women and children. Hence, shortages of water affected them most directly. On a negative side, Women and children spent an enormous amount of time and energy in fetching water from different sources such as boreholes and open wells at the expense of other more productive activities, such as farming, childcare, education and other income-generating activities. School going children always fail to report to school in the afternoons since their parents/guardians send them to fetch water, of which it requires long hours of waiting at the expense of schooling. From the field observation at different water points, I observed that children as young as 5years of age were being used as water collectors.

Figure 6.3: Water collection a major role of women and Children

Source: Field Photo 14/09/2011.

Note: Figure 6.3, In the right foreground two little girls wearing school uniform joining others at 'Acabo' open well to fetch water.

It is not surprising that, the majority of girl-child have been much affected by this task of providing water for their family members. For example, Table 4.3 in chapter four gives education indicators for Amuria district, which shows that females are more disadvantageous than their counterparts males in different schooling aspects such as class enrolment, performance, school drop-out and completion of different levels of primary and secondary studies. One of the contributing factors may include lose of time spent for household chores like; cooking, washing, firewood collection and of course water collection among other factors.

Figure 6.4: Children queuing for water at the borehole, Alira Ward

Source: Field Photo 14/09/2011.

Note: *Over 50 jerry cans are in the queue to be filled with water. Many children than adults can be observed from the background of the photo*

Due to low connection to piped water (15percent), most of the households (85percent) still access water from boreholes and open wells and this has impacted on children and women whose roles are to provide domestic water.

However, piped water access by a few households has been observed to help reduce the burden on the time and energy required to access water. For example, children in those households with yard tap connections have enough time to prepare for their schooling early in the morning and even in the afternoon since they are not required to travel far distance to fetch water, as do their counterparts with no connections. A woman with two primary school going children, who had yard tap connection lamented that:

> *I am very happy to have water at my premises, I wake my children early in the morning and prepare them for school and they don't have to go out to collect water from outside (other sources). When they come back from school, they only help in other domestic work other than travelling far distance looking for water as we used to do before, that was a very big task, time wasting and energy.....if we had no water, my children could miss afternoon classes due to long lines at the boreholes, but now no more* (26 year old Female Customer, Central Ward 15/09/2011).

Table 6.3: Trends in PLE performance for Amuria district compared to national average (%)

Grade	2006		2007		2008	
	Amuria	Uganda	Amuria	Uganda	Amuria	Uganda
D1	1	5.91	1.2	5.49	0.2	2.48
D2	51.2	47	49.3	45.5	26.4	30.6
D3	30	22.3	28.4	22.9	44.6	31.5
D4	13.3	12.5	13	11.9	16	14.7
U	4.5	11.5	8.1	13.3	12.8	20.1

Source: Uganda National Examination Board; Ssemakula, *et.al*: (2010).[12]

Amuria district has always been performing poorly in national examinations in both primary and secondary levels, given the fact that many factors including insecurity, inadequate infrastructure, limited number of post-primary schools, lack of a department database, inadequate staff both at the district headquarters and schools, dependence on Central Government and donor funding, inadequate facilities and facilitation for co-curricular activities in schools and community sports, and inadequate facilitation for support supervision[13]. Primary education performance is poor compared to the national average as indicated in Table 6.3 with declining trends in performance over the past year (only 0.2%

[12] Data compiled by Amuria education department, in the district development plan 2010/2012.
[13] Amuria District Development Plan 2010/2012

passing in first grade in year 2008). Access to water and sanitation at both school and home has never been considered as one of the crucial factor that can influence students' performance in schools, yet the time spent in fetching water, use of water to maintain personal hygiene and health directly or indirectly impact on students performance in class and final examination. For example, children who spend most time in fetching water do not have enough time to do revision at home, poor hygiene at home and school could lead to health problems like diarrhoea which may hinder class attendance for some time or even time and again depending on how the health situations are attended to. Given the short period of piped water access in ATC, it was not possible to draw a concrete statement on how it has impacted on class performance, but the fact remains that access to safe and clean water by students at school and home respectively plays an important role in personal hygiene and health including time saving for academic activities.

6.3.2 Health benefits of accessing and using piped water

The general disease burden for Amuria district as reflected in Amuria district development plan 2010/2012 shows that water related illnesses are still high, with diarrhoea leading (8%), intestinal worms (6%), and skin infections (3%). Though I did not have much analysis on the disease burden particularly for ATC, access to piped water has been reported by the respondents to have improved their personal hygiene and health, one of the beneficiaries of piped water in ATC in a statement seems to support this when she said:

> *I am now used to bathing three times a day due to the availability of piped water at my home compared to those days when I could buy water from vendors at a high cost (400UGX) per 20litres jerry can....you have to ration that water which is bought by even compromising bathing only once in a day. My health and the family now are out of the risk of getting sickness like skin infection and diarrhoea* (62years old Female customer, Central ward 19/09/11).

This expression signifies the importance of having personal yard tap connection than using public sources. As Guy and Paul (1999) put it; *"Households that must collect water from a communal service typically use far lower volumes of water and those households can be expected to have poorer personal hygiene and more restricted options for waste disposal."*

However, this study does not have much detailed analysis of health impacts on different categories of people like infant mortality, the elderly and others. Consider for example, sanitation and hygiene behaviour, which my study does not discuss but which can influence whether the provision of water supply translates to health benefits. It is likely that the provision of water supply encourages the adoption of hygienic behaviours. Cairncross (1990) argues that the provision of water leads to health impacts only when accompanied by the adoption of hygienic behaviour. Citing Esrey et al. (1985), Cairncross (2003) argues that hand washing thus turns out to have an even greater impact on diarrheal disease than water supply or sanitation. Nevertheless, as noted by Cairncross (2003), "a convenient water supply makes hand washing easier to practice and hence more likely. Indeed, it has been confirmed by observation in developing countries that mothers of young children are more likely to wash their hands at critical moments if they have a piped water supply (Curtis et al: 1995; Shanti, G-R. *et al*: 2008)."

In order to achieve personal hygiene and the general health from water supply, it therefore calls our attention on the quantity of water used, quality and behaviours of individuals in using water at the household not just having access to safe water source.

6.3.3 Income improvement

The use of piped water directly and indirectly improves on household's income. Through for example, establishment of home gardens that are watered using piped water has contributed to production of different crops that are meant for home consumption as well as for sale. It was observed that, vegetables including cabbages, tomatoes and onions to mention but a few were being grown in the home gardens by few households who have piped water connections. Consumption of these vegetables positively improves on the health of the household members and hence cutting the cost of treating malnutrition in children and even adults alike. "*Productive water may be critical among the urban poor in sustaining livelihoods and avoiding poverty and therefore has considerable indirect influence on human health*" (Fass: 1993; Thompson, et al: 2001). Some of the households were able to sell part of the vegetables within ATC daily market (*Atiida Market*) and this helped to diversify on their household income sources.

Directly, the cost of buying water from vendors has been reduced for those households who have yard tap connections. This does not mean that piped water is provided at a free cost; the

only difference is that, Vendors charge high prices for water three times to that of NWSC for piped water. The time spent previously in travelling to far distance to collect water at the expense of other productive activities at home or garden has been reduced too. The voice of a woman whose yard tap has been disconnected said.

> *Since I was disconnected from using tap water, my restaurant business has ended because I can't manage to buy water from vendors or sponsor someone to provide water for my business which demands a lot of water to keep good hygiene. That time (when connected), I was able to do everything on time ranging from cleaning of utensils from the restaurant, preparation of food and also washing clothes at home was regularly done unlike now when I am disconnected* (33years old widowed Female, Central ward 19/09/11.

This excerpt explains the negative consequences resulting from being disconnected and having no access to reliable safe water supply. This is one of the examples among the many households being disconnected; the livelihood strategies are also affected for those involved in the businesses that directly depend on water supply like restaurants and local beer brewers.

Figure 6.5: Example of home garden with orange seedlings at Central ward ATC

Source: Field Photo 17/08/2011.

Note: *Over 1500 orange seedlings are in this small piece of land and the owner sells each seedling at 2,500UGX after grafting to produce improved variety.*

Thanks to piped water, urban agriculture has improved the income levels for those households who are creative enough to utilise water for production. SIWI supports this; *"Better access to clean water services and management creates tremendous opportunities for the poor and is a progressive strategy for economic growths,"* (SIWI, 2004: 48).

Photo 6.6: Mixed crops in the backyard garden at Central Ward ATC.

Source: Field photo 17/09/2011.

Note: *In the centre, Orange seedlings are observed while on the right hand side luxurious vegetable (locally known as 'Abooga') grown for both home consumption and source of income to the household.*

6.3.4 Benefit to construction industry

The piped water project has relieved a burden from individuals and institutions on high cost of buying water for construction purposes. Previously before piped water was connected to Amuria town council, contractors had to hire some people to provide water needed either to build a school or individual housing structure, but now piped water can easily be connected to the construction site and such costs of buying water have reduced. Not only the cost of buying water, but also time has been saved from delays caused as a result of accessing water from community boreholes which needed more time to queue for water.

People hired to provide water for construction were either paid on monthly or daily basis depending on the type of contract. For instance, construction of school infrastructures payment was made on weekly and monthly basis. While, for individual housing construction, water providers were mostly paid on daily basis. The amount of water provided was measured in litres (20 litres Jerrycan) and each 20 litres Jerrycan was charged 300-400UGX multiplied by the total number of litres supplied per day, week or month to determine payment. However, it was not possible to obtain the actual amount of money spent on water purchase since most of the constructors had no reliable records on water provided; some had estimates ranging from 500,000-1,000,000UGX depending on the size of the structure and the nature of the work at the site. Individual households who are middle and high income earners with piped water connections also expressed their appreciation for having piped water that has eased development of housing and amazingly one household head stated.

> *When I started to build my house back in 2006, I had my budget with all building materials including labour...But I did not consider water in my budget as one of the building materials, so as work proceeded, I realised that water was a vital material that took a lot of money unknowingly. Now I do not have any worry to complete the remaining construction work since I have cheap and reliable water at my home* (43years old Male resident, Central ward 12/092011).

Figure 6.7: Water tap at the construction site for individual housing, Central ward.

Source: field photo 12/09/2011.

Note: *In Figure 6.7 at the centre, the pipe water facility with some construction bricks observed in the background.*

6.3.5 Impact on poverty

Poverty being an issue which comes in different dimensions, it is important to reflect that access to water can provide households and individuals with more alternatives of fighting against poverty. Having low incidence of water related diseases reduces the expenditure on health which also increases productivity of healthy individuals and household savings. Engagement of individuals in water related economic activities enhances the level of income to the household. For example, crop production from the home garden as some households were found to be practicing directly and or indirectly help in the fight against poverty as UNDP stated:

> *Lack of access to safe and adequate water supplies contributes to ongoing poverty both through the economic costs of poor health and in the high proportion of household expenditure on water supplies in many poor communities, arising from the need to purchase water and/or time and energy expended in collection* (UNDP: 1999).

It is therefore, clear that access to clean, adequate and reliable water for urban community plays a significant role in the fight against poverty. However, this could fully be realized if the level of piped water access by the urban households in ATC rises from the current 15 percent to the national target of 100 percent by 2015 as indicated in Table 2.1.

6.4.0 Summary

The discussions in this chapter some key issues ranging from income level classification on the social-economic stratus, factors influencing access to piped water and impacts of accessing water reveal that: The stratus of the 'urban poor' as classified by NWSC does not fully conform to my results finding in some aspects. For example according to my participants own classification given in Box 6.1, the income of the urban poor cannot be easily determined or measured since they do not earn income on scale basis, yet NWSC put it as 'those households with incomes of less than Shs.80, 000 (US Dollars 40) per month and in most cases earned on a day-to-day basis i.e. equivalent house hold income of US Dollars 1.33 per day.' The study also found that, the amount of water consumed do not solely depend on

the level of income but rather on various factors like household size and characteristics (age) of the household members, and economic activity that the household is involved in like local beer brewing and restaurant businesses are directly linked to use of much water. On the other hand, the determinants of piped water access were found to be varied from government institutional arrangement to individual contributions. It included level of income, poverty, NWSC charter, land tenure, population aspect, and economic conditions within the study area.

The positive impacts were found to include, health improvement, income improvement, school class attendance improvement though my study has no analysis on class performance, this needed detailed follow up study to assess school performance starting from the past years comparing with the current situation when piped water has been provided to schools and some households, of which this study does not include. Also this study was conducted just when the project was in operation for a short period of about 1year and it was not possible to ascertain immediate results on class performance within such a small period of time. Use of piped water has benefited different productivity sectors like crop production, business activities and thus directly helping those households connected to fight against poverty.

However, some negative impacts were also incurred by the community during and after the construction of the piped water lines such as; displacement of some households within poorly planned settlements along the road reserves, legal charges for illegal connections, debt burden to poor households and land degradation from excavations process.

CHAPTER SEVEN: CHALLENGES FACED BY ACTORS

7.1 Introduction

This chapter discusses the challenges faced by institutions in piped water provision particularly NWSC and those challenges faced by the public/customers. The challenges range from technical, financial to managerial for the case of institutions involved. For the customers reflect poor service delivery, financial as well as political challenges.

Figure 7.1: Road works at the main NWSC water pumping site in Aoja Swamp Soroti

Source: field photos 21/09/2011.

Note: *Left is the road works and right is the water pumping house equipment disconnected to allow road construction to progress. Only one water pumping house was functional during the time of data collection.*

7.1.1 Challenges to NWSC

The study revealed that, NWSC Amuria Sub-office and NWSC Soroti Head office are facing arrange of challenges as follows.

- The project has not been handed over to NWSC by the MWE officially, although NWSC is currently collecting revenue from the customers without full power from the top authority (MWE);
- Inadequate man power and equipments at the sub-office Amuria to manage and run the service delivery. Only four NWSC trained staffs were available by the time of this study at ATC;

- Electricity 'cut offs' at the water pumping site has continued to lower the quantity of water supplied. The alternative source of power was only the use of generators that were limited and costly in terms of fuel needed to operate them;
- Political interference at the grass root level encouraged some customers defaulting payment of water bills. For example, some opposition political activists during the 2010/2011 election campaigns misinformed the residence that piped water was provided for free by the government and thus, no need to pay for it;
- Unpredictable economic situation among the community with presence of poverty has reduced the capacity of customers to afford water connection and bills payments (see Table 6.2);
- Lack of coordination within and among different sectors at different levels affects service delivery for example construction of the new bridge at Aoja Swamp which is the water pumping site has greatly affected the functioning of the pumping equipments as seen in Figure 7.1; and
- Lack of community active participation in the management of water facilities especially public stand pipes as observed from Figure 5.9.

The area manager also explained that, the functionality of NWSC in Soroti has been overwhelmed with service provision to three districts of Kaberamaido, Amuria and Soroti itself. This sometimes has resulted to rationing of water supply in order to address such high demand from different districts.

The area manager suggested the way forward for some of the challenges mentioned as follows:

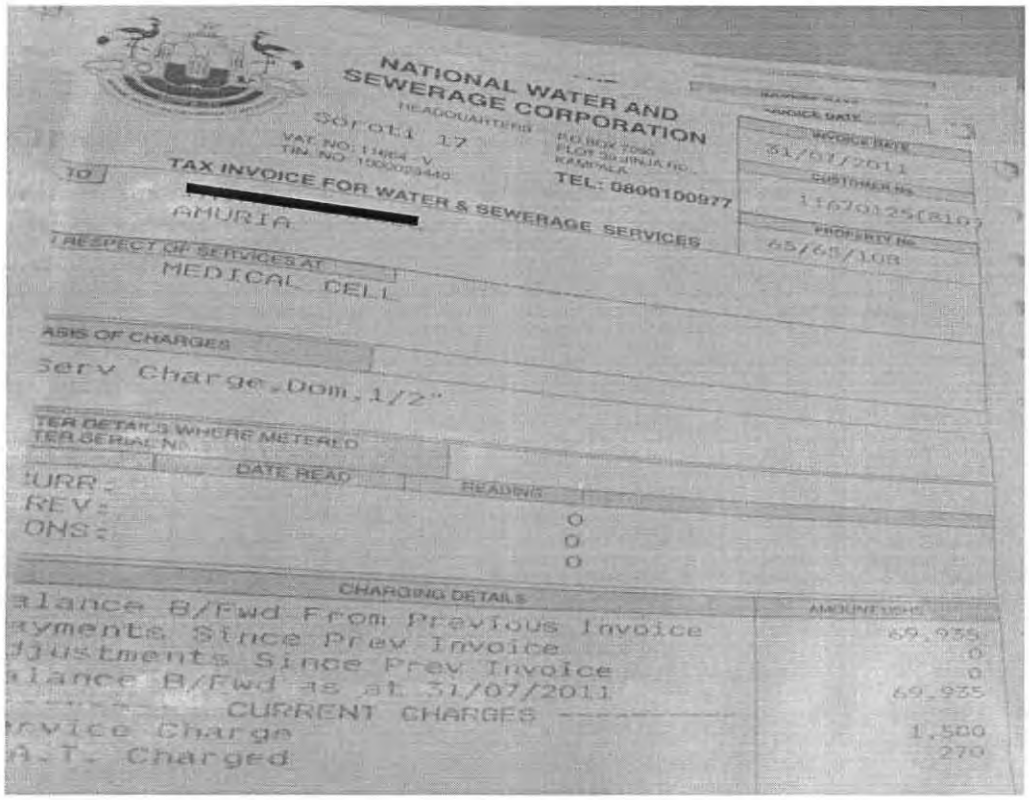
- There is need for installation of another new water tank in ATC
- Standby generator as alternative source of power need to be acquired
- Second water pumping house should be constructed at Aoja
- Amuria district council should lobby for another water tank from the ministry

The employees expressed political interference as a major challenge on the ground whereby some politicians mobilised the community not to pay for water bills claiming that, water is a public good, it has been provided free of charge by the government. It also influenced some people to make illegal connections which were detected by NWSC staff leading to disconnections and penalties to those found in the act.

7.1.2 Challenges to the public/customers

- Inadequate water supply, water can last for a week without any supply. 150 cubic meters steel tank is small and not enough to accommodate water needed;
- Massive disconnection of household pipe stands by the authority responsible for water supply (only 12 percent of households remained connected after disconnections were made);
- High connection fees and monthly water bills;

Figure 7.2: Example of High monthly water bills, Alira Ward.



Source: Field data (2011)

Note: *Water bills worth* ***69,935UGX (27.974US$)*** *as at 31/07/2011. The charges per unit cost of 1,770UGX is relatively high for household connections and this has contributed to some of the low income households to be disconnected after failing to pay their monthly water bills (See Figure 5.6).*

- Misreading the metre and providing wrong bills by the staff of NWSC;
- Water rationing by NWSC, only two hours in a day and if one is found not to be at home to fetch water at that time, then the opportunity is lost. Also the rationing goes beyond daily basis to include cut off of supply for two days or even a week to cater for other districts in the same system;
- New technology introduced of water bills payment through phones short message service (SMS) negatively affects those without phones and the elderly people who do not know how to effect payment[14]. Also not easy to have records for accountability purposes since the service is based on SMS. In Boxes 7.1 and 7.2, show statements released by NWSC;
- Most tenants are not allowed to use piped water connected to their residential places by land lords claiming that they (tenants) are not able to economise water leading to high water bills. Such land lords end up locking their taps permanently for their own personal family benefit only;
- Alternative sources like boreholes are mostly non-functional (50%) with no repairs made so far;
- No repairs made on broken lines. For example due to new road network establishment, water pipes get damaged without reconnections made;
- No involvement of the public in the piped water management system thus poor management of the public stand pipes and non-functionality;
- Public stand pipes are not functional due to lack of proper management strategy and the prices charged are not those set by NWSC (100UGX) but 150-200UGX charged;
- A majority of households are unable to meet the requirements laid down by NWSC for one to qualify for piped water connections;

[14] Note that Amuria District has no banking services, only accessed from Soroti District about 37Km.

Box 7.1: NWSC, URA phase out cash offices

Publish Date: Dec 07, 2011

By Cecilia Okoth

National Water and Sewerage Corporation (NWSC) and Uganda Revenue Authority (URA) have phased out cash office payments of water bills and taxes respectively for electronic payments.

Electronic payments, also known as e-payments, was ventured early this year to ensure customers are served much better.

Speaking at the launch of the system held at the Bank of Baroda offices in Kampala on Wednesday, Alfred Okidi, Chief Manager Finance and Accounts (NWSC) said 'the long queues that customers made had become inconveniencing and that is why we decided to use electronic payments.'

"We shall not be doing any more paper work. All you have to is carry your water bill account number to any bank or mobile telephone Company of your choice and payment will be instant," Okidi said.

In the same way, James Odong who represented URA said the company had started a modernization initiative to improve customer services through E-payment.

Source: New Vision National newspaper, Kampala[15]

- Low quality of the materials provided by the company. No protection to the model of tap stands provided at the household, they do not have lockers and one has to buy a new one with locker. This has encouraged water theft; and
- Having a bigger household number also increases the demand for water and expenditure on water provision. Most of the poor households tend to have many children and total household size than the rich households. Hence they face a challenge of addressing water needs including those of health, food and education.

[15] http://www.newvision.co.ug/news/314701-nwsc-ura-phase-out-cash-offices.html available on 07/12/2011

Box 7.2: National Water partners with Tropical Bank for E-water payment

Publish Date: Jan 25, 2012

By PATRICK JARAMOGI AND BILLY RWONTHUNGEYO

National Water and Sewerage Corporation clients will now spend less time while paying their utility bills at the newly launched E-water electronic payment system at Tropical Bank.

NWSC Corporation Secretary Sylvia Walusimbi said the new move is intended to streamline the provision of better service delivery.

Addressing the press after the launch held at the Tropical Bank head office along Kampala road on Tuesday, Walusimbi who represented the Managing Director Eng Alex Gisagara said; "the E- water payment system is efficient and convenience."

She said the launch of the system with Tropical Bank brings to 18 the number of banks partnering with NWSC in the E-water payment.

Launched last year, the system is aimed at improving NWSC's service delivery by phasing out cash collection services and bringing on board financial institutions and mobile money service providers.

Speaking yesterday at the signing of the Memorandum of understanding at Tropical Bank Headquarters, Walusimbi said they are focusing only on improving water service delivery to their customers.

The acting managing director Tropical Bank Prince Kassim Nakibinge said no additional fees will be levied for the E- water electronic payment system.

Nakibinge reiterated the commitment of the bank towards electronic banking.

"The e-water service expands our existing electronic products of internet banking, SMS Banking and E-tax payment. In mid-2012, we shall issue Visa International Cards to all our customers," he said.

Source: New Vision National newspaper, Kampala[16]

This NWSC initiative of phasing out cash payment is a big challenge to the low income groups in ATC who do not even have access to banking services at their disposal. Also very few customers possess phones to adopt SMS Banking. Otherwise NWSC has to reconsider

[16] http://www.newvision.co.ug/news/628580-National-Water-partners-with-Tropical-Bank.html available on 25/01/2012

other methods of water bills payment in order to accommodate those who cannot afford modern technology.

7.2 Copping strategies

- Use of water from unprotected sources like open wells (e.g. *Acabo* open well)
- Overcrowding in few functional boreholes, queuing for 2-3 hours to access water
- Water theft at night from the neighbourhoods.
- Relying on friends and relatives to either provide water or financial assistance
- Purchase of water from vendors at high costs
- Use of children to travel long distance to collect water either by bicycle or on foot to a distance of 2-3km
- Rationing water uses at the household for example limiting regular washing of clothes and bathing once in a day.

7.3 General recommendations for water supply improvement

a). Maintenance

- Ensuring effective communication from NWSC to customers for water rationing schedules to allow customers to get prepared for alternative sources
- Public stand pipes need be repaired and committee put in place to manage them and more public taps need to be increased to cater for increasing urban population.
- Fencing or building a strong structure at the public stand pipes to protect animals from accessing them, thus avoid damages caused to the taps.
- Regular monitoring of piped water quality in terms of treatment by NWSC, to ensure safe water supply to the community.
- DWO should play its part in ensuring that broken boreholes are repaired and regular monitoring continue to ensure their well operation and functionality

b). **Participation**

- Community members have to be included to participate in water management programmes through training them on better ways of handling water at household level. Not only should they be involved in the management programmes, but also in the design, planning and implementation of water supply projects.
- Poverty reduction programmes have to target the low income groups, so as to enable them to increase their income and be able to pay for water connections and bills.

- *'Acabo'* open well could be developed to become a protected spring well since it supplies water throughout the year.
- Communities need to acquire good water storage facilities at household to store adequate water, so as to reduce the burden of water shortage when supply is being cut off. However, this may become a challenge due to financial constraints but if NGOs and Donor community could facilitate this for low income households, it would be possible.
- Alternative source of power should be put in place at the water pumping site in Aoja swamp to offset electricity blackouts leading to inefficiency to provide water.

d). Governance

- There is need for coordination among different sectors, for example ministry of transport and communication, ministry of energy and ministry of water and environment should cooperate in delivering services. For example road construction affects water connections and also lack of power to pump water also impacts on water supply.
- Amuria Town Council should lobby for another main water storage tank from the central government to increase on water storage capacity to the available 150cubic meters steel tank.
- NWSC has to regulate the prices of public stand pipes to enabled poor households to afford water.
- Connection charges should be reduced to enable the poor to afford

7.4 Summary

The key issues raised in this chapter include: lack of coordination in deferent sectors and bureaucracy in the government sectors involved in the urban water provision, limited technical power for NWSC, poor performance of the water supply system due to inadequate electricity at the pumping site, high costs of production and supply of piped water. These were majorly the challenges to the government institutions including MWE and NWSC.

However, the community was found to be challenged by; high costs of connections and water bills leading to low connections (15 percent) and massive disconnections (3 percent), inability to meet the requirements laid down by NWSC Service Charter, low service provision, new changes in payment technology to E-payment (see Box 7.1 and 7.2), unreliable water supply coupled with water rationing and non-functionality of other sources

like the boreholes. I have tried to discuss some recommendations in the last Chapter (8) on how these challenges could be addressed by different stakeholders or actors, for the betterment of urban piped water provision and management in ATC.

CHAPTER EIGHT: SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Summary of the key findings

The study found that the government role in the urban water supply is dominant compared to other actors like the private and Civil society. The private company was able to achieve some of the projects objectives of delivering piped water to ATC. The major determinants for piped water access were found to be access to land, NWCS Charter, Government policies in addressing poverty, unemployment, infrastructural development and general economic conditions like inflation. Socio-economic impacts have been registered by those connected to piped water in the areas including not limited to; time saving, increased productivity in water related businesses, health and hygiene improvement and school attendance for school going children. It has also created employment opportunity to some households who are able to sell piped water to community members to earn income. However, the main challenges facing the water supply include; governance ineffectiveness in service delivery (low service provision, poor accountability, bureaucracy, no public participation), the private company contracted to make connections did not meet all the requirements in the agreement to construct the total number of facilities recommended.

NWSC new high connection charges are not subsidized and low income households have been affected, whereby even those who managed to have connections initially at the start of the project have been disconnected due to inability to pay monthly water bills. The alternative sources of water supply like the boreholes half-were also found to be non-functional and now the community depends on water purchase from vendors and accessing water from unsafe open wells available in Amuria town council as their coping strategies.

8.2 Theoretical framework revisited

The structuralist framework derives most arguments from Marxist theories that seek to understand or examine economic and political perspective that the processes of change and dynamics within society, and exposing hidden levels of structures which regulate the uneven nature of society. In this study, I developed my own analytical framework which seeks to understand government institutions' role in water supply, linking with the roles of other actors such as the NGOs, Private sector, informal sector and the local community. The

government institutions both at national, local and community level produce many structures and processes leading to water provision and access by the beneficiaries. For example MWE holds power from the national level, NWSC works at the district level and the private sector and NGOs interact with both the community and the government institutions in service delivery. The interaction of these actors was found to determine the level of water access by the community and impact on socio-economic conditions of the community as the main change in the interplay of economic, social and political factors in ATC as Marxist theories argue.

8.3 Conclusion

The study has showed that many challenges are being faced in the field of governance effectiveness in service delivery, it is possible to draw a conclusion that governance in ATC and piped water supply is ineffective due to limited public voice and accountability, and bureaucratic regulatory framework among other factors. It is worth noting that, the constructor (ACCL) did not fulfil all the requirements in the project agreement like construction of 10 stand pipes for the public, only 4 were constructed, with 6 stand pipes missing. In the agreement, 250 connections were to be made but only 229 are available from the official data in NWSC office, limited by 21 connections. These are some of the key issues which are not addressed since the private company was able to make accountability to top authority (MWE) other than to the public. The fact remains that, institutional arrangement for the water sector is bureaucratic and characterised with limited public participation, making it hard to determine which sub sector should be held accountable for ineffective service delivery and poor performance of the water project.

8.4 Recommendations

I recommend the role played by different stakeholders for the success of the urban water project in Amuria district particularly; Ministry of Water and Environment, Ambitious Construction Company Limited, National Water and Sewerage Cooperation, WaterAid and other administrators in Amuria Town Council. In spite of the achievements made so far, many challenges still remain ahead of the project like ensuring effectiveness and efficiency in the service delivery, increasing the numbers of pipe connections to those areas not yet connected, training of the manpower, provision of additional water storage tank and building partnership with all stakeholders for sustainability of the water project. I have given some

policy recommendations on the following areas; contracting of projects to private companies, administrative and managerial aspect, planning and project design, socio-economic and technical aspect of the piped water provision that I believe could help to address the challenges in service delivery.

Contracting of development projects to private companies

Based on the findings of this study, Ministry of Water and Environment which is the lead agency in the water issues made all the contract arrangements at the national level with Ambitious Construction Company Limited without any local input contributed at the district level. Decentralisation has been one of the issues that the government has supported since 1992, however, the powers have not been decentralised since most of the development projects are centrally designed, planned and implemented including accountability made centrally other than locally. Therefore I recommend that:

- Local governments be given full powers by the central government to contract and monitor development projects that are intended for the benefit of the local community.
- Non-Government Organisations' support for development should be channelled to the local governments other than creating bureaucracy from the central government. This could help in efficient resource allocation, monitoring and evaluation of the projects effectiveness.

Planning and project design

The current theories on development issues argue that, for any project to be sustainable and effective there should be participatory planning. There are many actors involved in the urban water supply, yet not all have been involved in the planning and design of the piped water project. The recommendations below should help MWE and NWSC to build on future projects sustainability:

- All stakeholders (actors) should be consulted at all levels especially through bottom-up approach so as to allow the interests of the beneficiaries to be included in the plans and design of any development project. This could provide them with the sense of ownership during and after the project implementation thus leading to sustainability.

- Local government especially Town council administration should fully be involved at all stages of project development so as to empower them to monitor and regulate the implementation and operation of the project. Also this could help to check issues of any corruption and inefficiency in service delivery.
- Informal sector have to be included in the planning process in order to recognise their contribution on the betterment of service delivery. For example, the water vendors have not been recognised by the government water development policies, yet they are actively involved in the provision water services to the urban community.

Administration and management aspect

The Urban water supply management is mandated to NWSC after the establishment of the piped water system by MWE and Directorate of Water Development. This does not only create bureaucracy, but also leads to lack of autonomy in planning for effective and efficient service delivery by NWSC.

- There should be power sharing among the government institutions so as to enable management of development projects. It was even surprising to note that, ATC piped water was not handed over officially to NWSC by MWE since its completion a year past and this has never given NWSC to take full responsibility to administer and manage the project effectively.
- Staffing of the NWSC new sub-office in Amuria town council need to be done in order to increase the workforce for effective management of the project.
- There should be procedures put down on how the public stand pipes are managed, the Customer Service Charter does not have any mention on this issue. For the better management of public stand pipes meant for the 'urban poor', I suggest that a committee including the members of the poor households officially be appointed by NWSC management to help them protect the stand pipes.

Socio-economic development

The water policy objectives clearly explain the need to improve socio-economic development with the emphasis of empowering the community more especially the women. However the

challenges are still ahead to achieve these objectives and below are some of the areas that I observed to be of importance:

- Poverty reduction strategies should be implemented effectively in both rural and urban areas in order to minimise mass rural urban migration which in turn increases pressure on the few available services like water. Poverty is one of the contributing factors to inability of most households to access urban services which should be addressed through government and NGOs programmes like establishment of microfinance institutions to provide loans with affordable interest rates among others.
- Water for production should as well be provided alongside domestic water supply, this could help those households who are currently involved in small home garden crop production to expand their productivity.
- Gender empowerment should be practically implemented focusing on women and children, women are the key household water providers yet their effort has not been taken seriously regarding water resources planning and management. NWSC should design programme focused on women like the widowed, disabled and the elderly. Instead of providing public stand pipes which do not directly solve their interests, these category of vulnerable people could be identified and direct yard tap connections made to their premises at a subsidised cost other than public taps that are accessed by everybody and also costly in terms of energy, money and time.
- Community sensitisation on the importance and good piped water management practices should be done by NWSC. Lack of awareness on how to manage piped water has contributed to poor functionality of the water facilities, with the public taps being the worst damaged. Since the community was not involved in the planning and implementation, sensitisation could help build their trust and positive attitude of ownership of the water facilities.
- The new connection costs should be revisited to help the poor households afford piped water connection. Instead of considering the parameter of distance (metres), the poor households could be charged a fixed subsidised rate as it was done by the private company irrespective of the distance.

Technical aspects

The main challenges affecting the performance of the water supply technically include; inadequate water pumping equipments, unreliable electricity supply, treatment of water before distribution, inadequate technical staff and road sector works interfering with water network both at the source (Aoja swamp) and distribution lines at ATC. In order to address these challenges, I recommend not limited to:

- Training of more technical staff to help in water supply project and also provision of data storage facilities for Amuria town council sub office like computers with solar power to run those equipments.
- Standby generators should be provided to encounter shortage of power at the water pumping source.
- Effective collaboration among different sectors should be encouraged more especially on areas of planning and implementation of development projects. Interdisciplinary planning could help minimise the damages caused on water pipe network for example by road constructions. Also NWSC should put the signs along the water lines crossing roads and even next to individual land/plot, so as to avoid accidental damages caused to piped water networks in ATC.
- Monitoring and regular repairs of both piped lines and borehole water sources should be done effectively by NWSC and the district water office respectively. Most of the community members depend largely on boreholes for domestic water needs yet half of these are non-functional due to lack of repairs.
- Good Urban governance should be embraced at all levels in order to improve technical, managerial and administration of the water project. The issues of transparency and accountability, monitoring, evaluation, resource allocation, fight against corruption and efficiency in service delivery stem from how effective the urban governance in dealing with these factors mentioned.

Recommendations for further research

- This study concentrated in the assessment of piped water project performance through assessing roles of the actor's contribution, factors influencing access to piped water, socio-economic impacts and challenges faced by the actors. It could have been valuable if a detailed analysis of some issues like increasing local community participation in planning and implementation of piped water projects for the urban community. How could this impact on water provision, effectiveness and efficiency if well understood. Also there should be an assessment of the available open wells for their feasibility to be developed as protected spring wells that would be safer for the public health.

Appendix 1: Interview guide

Assessing piped water provision and its impact on socio-economic conditions of Amuria Town Council Community, Amuria District. August –September 2011.

Dear respondent, the information provided is meant for Academic purpose and it will be treated in a confident manner.

A. Household interview guide

Name (optional).....

Age.....

Ward/cell of residence .....

1 Gender

a) Male b) Female

2 Level of education

a) Primary b) Secondary c) Tertiary d) None

3 Marital status

a) Married b) Single c) Divorced d) Widowed

4 Household head

a) Yes b) No

5 Household size.....

6 How do you earn a living (economic activity)?

7 What are your major sources of income?

8 How much money do you earn per month from any income generating activity you are engaged in?

9 Where do you access domestic water for your household from?

10 Are you connected to the piped water? Yes or No

If not why?

If yes, for how long have you been using tap water?

11 Have you been disconnected from using tap water? Yes or No

If yes, what are the reasons for disconnection?

12 At what location do you access water from?

a) Communal b) Yard c) Within-house tap stands d) Others (specify)

13 How much time do you take to collect water?

a) 5 minutes b) 10-15 minutes c) 30 minutes d) 60+minutes

14Who is mostly responsible for water collection at the household?

a) Woman/Wife b) Girl child c) Man/husband d) Boy child e) All members f) Vendor

15 How do you manage and use the water at the household level?

16 How was the domestic provision water situation before piped water project implemented?
17 How has piped water provision improved your households' socio-economic conditions?
18 How much water do you use per day?

a) 10ltrs b) 20ltrs c) 40ltrs e) 60+ltrs
19 Is the water provided to your household adequate and safe for domestic use?
20 How much money does your household spend on water purchase/bills per month?
21 Do the prices charged for water change with the seasonal variations? If yes, why?
22 When do you experience water supply shortages?
23 What problems are you facing from water supply scheme?

24 How do you cope with water inadequacies?

25 What is your attitude/perception towards piped water provision?

26 What kind of assistance do you access from the Government, Non- Government Organisations and or civil society organisation in a bid to meet safe water requirements?

If none, why?

27 Which factors determine your household access to piped water?

28 What do you suggest to address water supply and access problems?

Thank you!!!

B. Questions for water vendors including kioks operators:
1 Level of education

b) Primary b) Secondary c) Tertiary d) None

2 Marital status

b) Married b) Single c) Divorced d) Widowed

3 Household head

b) Yes b) No

4 Household size.....

5 Ward/cell of residence .....

6 Why did you decide to start this particular kind of business?
7 When did you start? How long have you worked as water vendor?
8 What is your relationship with the community and customers?
9 How much do you charge for water per litre/20litres jerrycan?
10 How much money per month do you earn from the sale of water?
11 What are the challenges you are facing from your work?
12 How successful is your business?
13 Describe any other ways that you/your family generate income?
14 How do you cope with the challenges you are facing?
15 What are your aspirations and suggestions for the betterment of water provision?

16 How do you perceive the government role in piped water provision?

Thank you!!!

C. Interview Questions for Local Government officials

1 What is the water provision history for Amuria Town Council since 2005?
2 How do people in ATC make a living/economic activity?
3 What major water sources do the community have access to?
4 Where does your household access water from?
5 What are some of the major problems/unmet water needs in ATC?
6 What do you think are the causes?
7 What major water provision issues does local government deal with in Amuria town council and what is the process? Disputes? Land tenure?
8 What special attention is given for the vulnerable people like; women, children, the sick and elderly?
9 How many households are currently served by different levels of piped water connections?

Communal?.....Yard?.....Within-house tap stands?.....

10 What determines the legibility of a household or institution to get connected to tap water?

10 How many households have been disconnected due to none payment of their monthly bills?

11 What is the period given by NWSC to those households who fail to pay their water bills before their taps are disconnected?

12 Do they receive warning information before disconnection? Yes or No?

If not, why?

13 Who are the key stakeholders/actors involved in the water provision?

14 Are there any regulations towards use and management of water in Amuria Town Council?

a) Yes b) No

If yes, how do they work to facilitate water use and management?

15 Do members of the community adhere to these regulations?

a) Yes b) No

If not, why?

16 How have these regulations helped in ensuring access to clean and safe water?

17 What do you suggest to address water supply and access problems?

18 What are the strategies put in place to address some of the challenges facing water supply and management?

THANK YOU!!!

D. Focus Group Discussion Guide

1 How do the community in Amuria town council earn a living (economic activities)?
2 What are the major sources of domestic water supply?

3 Which factors are contributing to piped water access and who are the actors involved in water provision?
4 Whom do you consider to be poor/low income earner?
5 What is the situation of domestic water supply in Amuria town council compared to the past 5 years?
6 How has the piped water project improved on your socio-economic conditions?
7 What are the challenges you are facing from domestic water access?
8 How do you perceived the performance of piped water project?
9 How do you cope with some of the challenges you are facing?
10 What do you suggest to address such challenges?

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Date: 24/July/2011

To: AMUMIA TOWN COUNCIL
AUTHORITIES, AMUMIA DISTRICT(O).

Urban Challenges and Urban Development in East Africa is a two year full-time multi-disciplinary masters program jointly run by the Addis Ababa University of Ethiopia and Norwegian University of Science and Technology of Norway.

ECHIRU KIZITO is a student in this program. Students registered for this program are expected to write MA thesis on different urban developmental issues. He is working on a thesis entitled "Assessing piped water Project and its impact on socio-economic conditions of the urban community in Amumia District".

We therefore, appreciate if you could assist him by providing the necessary information or data.

Sincerely yours,

Woldeab Teshome (PhD)
Director, IRLDS